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ABSTRACT

Presented in the second of a two volume series is a language training program for developmentally delayed children from infancy to development of grammatically appropriate sentences. The second volume is said to have been developed in the Infant, Toddler, and Preschool Research and Intervention Project (Tennessee) and to focus on training the Preschool Research and Intervention Project (Tennessee) and to focus on training the basic actor-action-object proposition that serves as a basis for linguistic communication. It is explained that the components of verbal imitation, comprehension, and production are incorporated into the 14-phase sequential program. Usually given for each phase are the objective; the setting; directions for the baseline probe; training; data, and training probe procedures; and generalization training procedures. Discussed are the following training phases: the initial behavioral control stage; functional use of objects; verbal imitation of sounds; comprehension, verbal imitation, and single-word comprehension, and production of two-word phrases, and imitation, comprehension, and comprehension, and production ot two-word phrases, and imitation, comprehension, and production of three-word phrases. It is noted that a child moving successfully through the program will understand and produce some three-word actor-action-object constructions and that some children will be able to progress to other constructions such as articles and interrogative transformations. Included in appendixes are procedures for teaching verbal imitation (such as shaping sounds and words, and a lateralization program to increase the child's vocabulary and aid areas such as generalization of sounds. (MC)

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IMRID Behavioral Science Monograph No. 22

LANGUAGE TRAINING PROGRAM FOR YOUNG DEVELOPMENTALLY DELAYED CHILDREN

Volume 2: Training the Basic Actor-Action-Object Proposition

by

Diane Bricker

Laura Dennison

Linda Watson

Lisbeth Vincent-Smith

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Institute on Mental Retardation and Intellectual Development

George Peabody College for Teachers

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ACKNOWLEDGEMENTS

The program that follows is the result of several lines of investigation, years of work with language deficient children, and the interest and dedication of a small group of professionals and parents to the idea that young children with severe language problems can be helped. The problem that confronted us was what training mechanism would prove most useful. The route we chose was to develop an early intervention program for young developmentally delayed children. Within the confines of the Infant, Toddler and Preschool Research and Intervention Project (D. Bricker & W. Bricker, 1971; 1972; 1973) the language training program presented in this monograph was developed. The development of this program is on-going and its validity as yet to be established--that is the major task that confronts us in the next few years. The children, parents, teachers, and researchers involved in the Infant, Toddler, and Preschool Research and Intervention Project will be involved in establishing the usefulness of this program and to each of them we are grateful for their input in the past and their continued support in the future.

To one person we are particularly indebted. Bill Bricker has been primarily responsible for generating the ideas and positions that serve as the basic framework for this program. He questioned and often challenged various phases in the development of the program and we believe his criticisms have resulted in a theoretically defensible program. The validity of the program remains an empirical question yet to be answered.

The development of the language training program was supported in part by the Institute on Mental Retardation and Intellectual Development (NICHHD Grant No. HD-00973), the Center Grant (NICHHD Grant No. HD-04510), the Parental Teaching Style Assessment Program (NICHHD Grant No. HD-07073), and the Joseph P. Kennedy, Jr. Foundation.

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Preface

The program that follows is the second volume in a three volume series. These three volumes are designed to span the training of language skills from infancy to the development of grammatically appropriate sentences. This developmental continuum is divided into three segments more as a convenience than as obvious demarcations in the developmental sequence. Volume one deals with the cognitive and linguistic prerequisites to a formal language system. Volume two focuses on training the basic actor-action-object proposition that serves as the basis for linguistic communication. Volume three will be concerned with the modification of the kernal, declarative sentence with particular emphasis in training modifiers, prepositions, questions, and negation and should be completed by September, 1974.

LANGUAGE TRAINING PROGRAM

Volume 2--Training the Basic Actor-Action-Object Proposition

The program that follows was designed to be implemented within either the classroom or home by a teacher or parent. The teacher should be aware that language is not an isolated system; therefore, other curriculum areas should be trained simultaneously whenever possible. The program is not presented as a rigid set of exercises but as a model with suggested content and procedures that should be modified by the teacher to fit the individual needs of each child.

In order to help the teacher or parent understand the overview of the training program the major training areas have been sequenced into a lattice which is presented in Figure 1. This lattice is a model which guides the training sequence to be employed with a child as he develops in a particular skill area. The teacher should take time to read and understand the training sequences that appear in the lattice in order to grasp fully the movement of the language program from simple prerequisite skills to the development of sentence length utterances that are grammatically correct. For a discussion of the rationale that underlies this lattice and the training program see: D. Bricker, Ruder, Vincent-Smith & W. Bricker, 1974; W. Bricker & D. Bricker, 1974.

The formal language training program is composed of three critical areas: verbal imitation, comprehension, and production. The sequence of training for these three areas is outlined in Figure 2. The teacher should become familiar with this figure in order to understand the sequence of training outlined below in the program. Verbal imitation refers to the imitation of a vocal sound produced by a model. Verbal imitation can range from imitation of a single sound such as /a/ to the production of

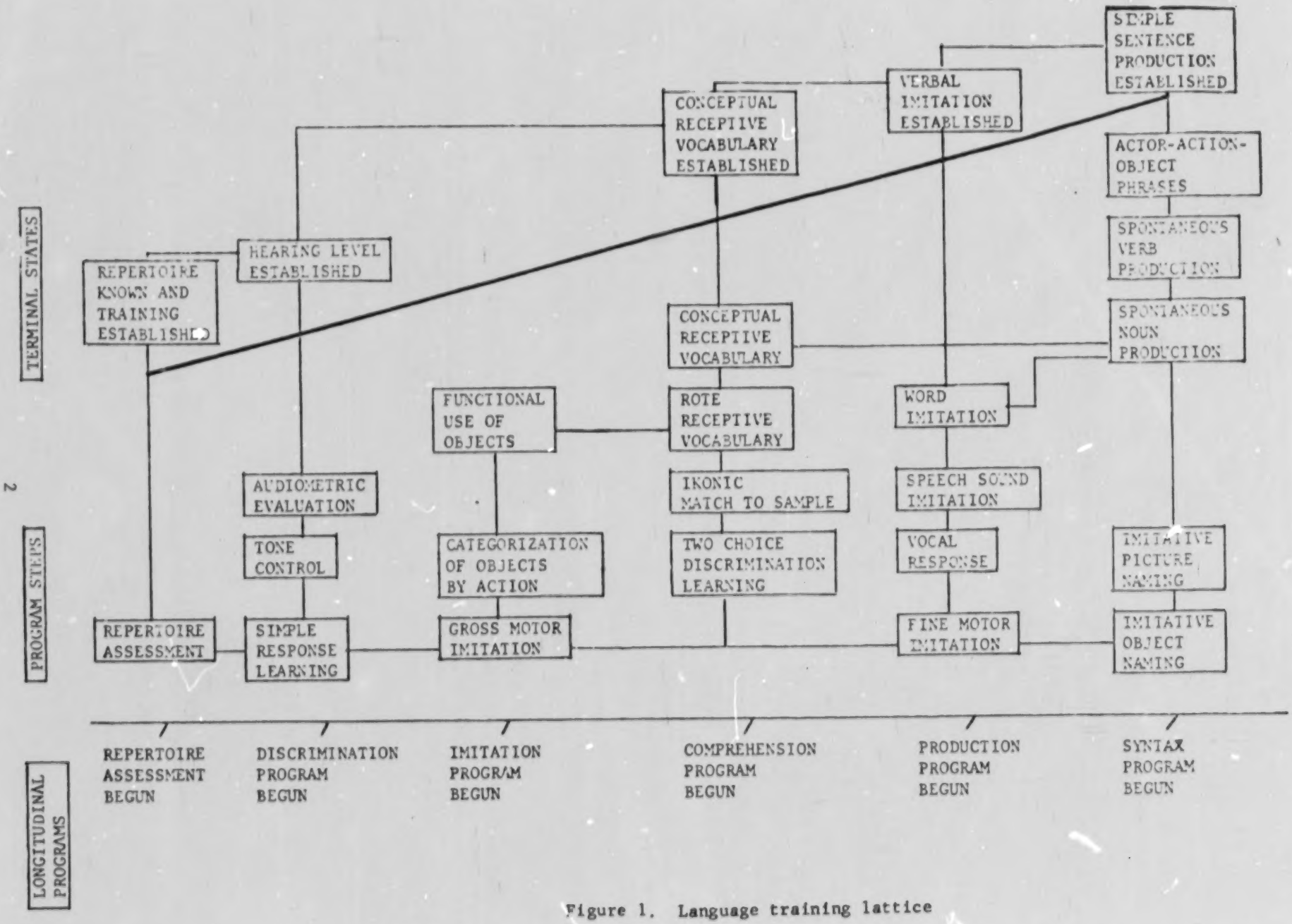

Figure 1. Language training lattice

Language Program

Prerequisites:

Behavior control Motor Imitation	Behavior control Audiometric assessment	Behavior control Babbles

Part I: Training of Initial Actor - Action - Object Constructions

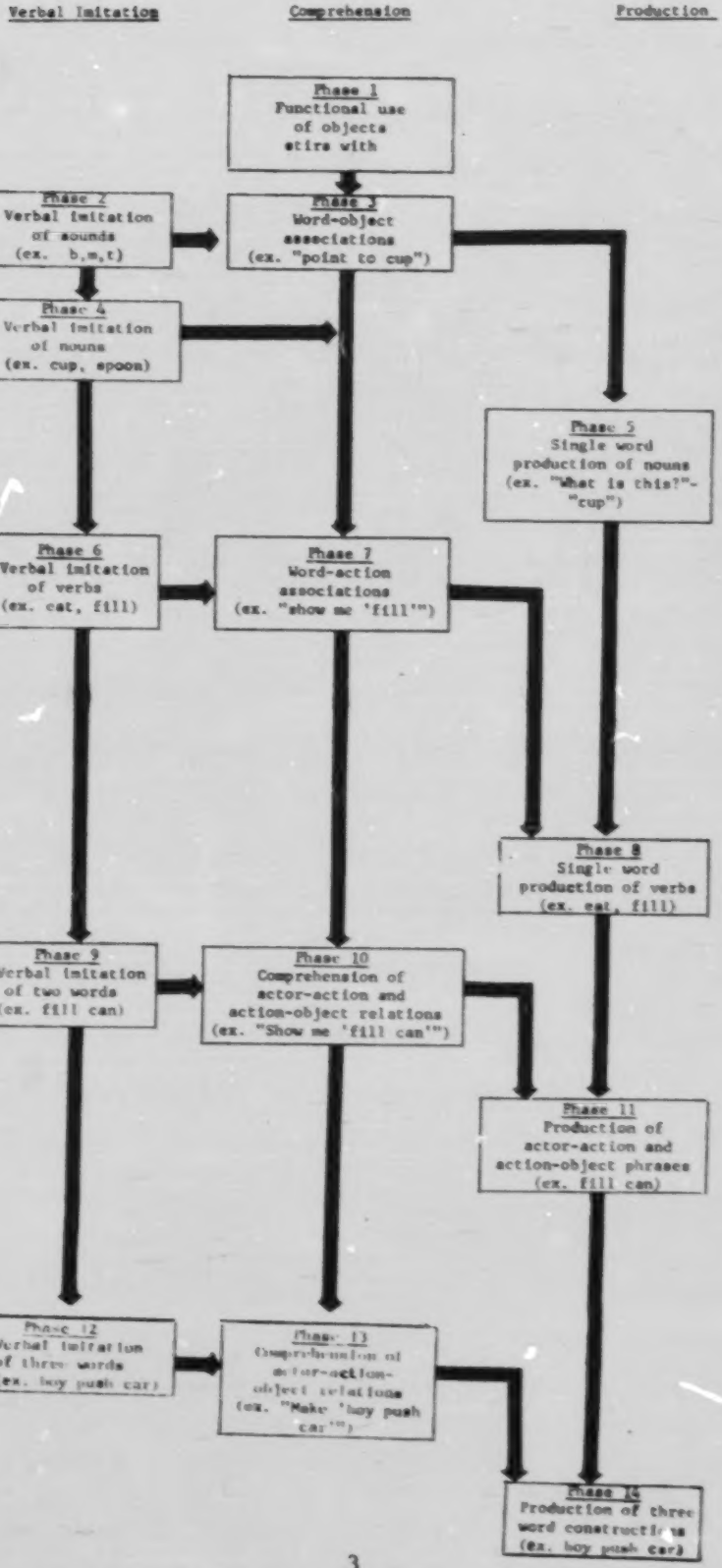

Figure 2. Language training sequence

a sequence of several words. Table 1 contains a list of the major phonemes in English. These phonemes are divided into the three basic

Table 1

Major Phonemes in English

Consonants				Vowels				Diphthongs	
/k/	key	/b/	boy	/a/	ask	/ə/	sofa	/eI/	late
/l/	lip	/d/	do	/ɑ/	calm	/ɛ/	bet	/aI/	dine
/m/	me	/f/	fine	/æ/	bat	/I/	bit	/ju/	you
/n/	no	/g/	go	/e/	locate	/i/	beet	/oU/	soap
/ŋ/	sing	/h/	he	/ɝ/	bird	/ʊ/	cloth	/aU/	how
/p/	pie	/j/	yes	/ɚ/	mother	/ɔ/	jaw	/ɔI/	boil
/r/	rip	/t/	to	/u/	cool	/o/	oval		
/s/	sip	/θ/	thin	/ʌ/	cut	/U/	cook		
/ʃ/	she	/ð/	then						
/z/	zip	/v/	vine						
/dʒ/	juice	/tʃ/	chair						

categories of consonants, vowels, and diphthongs. Since training generally focuses on the consonants, Table 2 presents the production difficulty level for the major English consonants. Comprehension refers to control of behavior by verbal (or can be nonverbal) environmental stimuli. Production as used in this program is the ability to spontaneously emit appropriate verbal behavior. These components are presented in Figure 2 in a hierarchical order which currently approximates our best guess in terms of the appropriate developmental sequence for each component. The training program is presented in this manner so the teacher can follow the developmental sequence of

verbal imitation, comprehension, and production as well as see the relationships that exist between the various phases of these three components.

Table 2

Difficulty Level for Production of English Consonants According to Bricker (1967)

Level 1*	b as in boy	Level 4	ʃ (sh) as in shoe
	w as in way		r as in run
	m as in man		l as in lamp
	t as in toy		tʃ (ch) as in church
	d as in dog		z as in zoo
Level 2	h as in hat	Level 5	ʒ as in measure
	n as in no		ð (th) as in that
	k as in cat		θ (th) as in thin
	p as in pipe		v as in vest
			j (y) as in yellow
Level 3	g as in go		ŋ as in sing
	s as in see		
	f as in fat		
	dʒ (j) as in judge		

*Level 1 indicates those sounds easiest to produce, Level 5 those sounds most difficult to produce.

Inherent in the training program are several important features based on our last three years of work with young, language deficient children. First, assessment of the child's repertoire in a specific area is necessary before beginning training; otherwise, evaluating the effects of training would be impossible. Second, more complex behavior is built from preceding behavior. The child must acquire the prerequisite behavior before moving on in the program. The program phases were built on a developmental sequence which implies that the child acquire the phases in the specified order found in Figure 2. Third, training stimuli employed must be useful to the child. Fourth, training should occur in a situation that will provide for maximum generalization for the child. Fifth, children should be trained in small groups whenever possible. This insures efficient use

of the teacher's time and allows the children to provide each other stimulation.

Before presenting the formal language training program, the teacher should be sure that the child has met criterion for the behavior control prerequisite stage. The formal program begins within the comprehension component with Phase 1 training the functional use of common environmental objects such as cup, spoon and pan. Functional use of an object seems to be a precursor to comprehension of that object's name and consequently, can be used as a possible link for learning the object's name. In this phase the children are taught, for example, to drink and pour from a cup and to stir and eat with a spoon with no attempt to have the child produce the verbal labels.

Once the child has reached criterion on Phase 1, the verbal imitation component is introduced (Phase 2) in which verbal imitation of sounds is trained. The training sounds selected from the training stimuli in Phase 1 are simple to produce and are presented in isolation. Phase 3 can be begun simultaneously with Phase 2 and is the second step in the comprehension component. In Phase 3 training is shifted to comprehension of object names. The stimulus objects are those used in the functional training in Phase 1. In this phase the child is told to touch or point to the named object. Since the child already has in his repertoire the functional use of the object, the functional movement can be used to help the child associate the verbal label with the appropriate object. For example, the drinking movement could be used to help the child associate the verbal label "cup" with the object cup.

Phase 4 moves into verbal imitation training of the words used in

Phases 1 and 3. The child has already been trained in Phase 2 to produce the sound constituents that compose the training words. The child's task during this phase is to learn to sequence these sound constituents into word-length units. When a child has completed this phase, he is able to imitate the training words as well as point to the appropriate object when named.

In Phase 5 the child learns to combine the skills he has acquired in Phases 3 and 4. The ability to verbally imitate a word combined with comprehension of that word should result in the verbal production of that word in the presence of the object.

Phase 6 through 14 expand the responses to be learned both in terms of length and complexity. For example, in Phase 9, the child is asked to imitate two word sequences and in Phase 10 he is required to comprehend two word utterances which should lead to Phase 11 the production of two words. These two word utterances are actor-action and action-object phrases which describe activities that the child learned to engage in during functional use training. In other words, knowing how to use objects in a functional manner gives the child a basis for early syntactic constructions, such as "boy eats" and "fill cup." After the child learns to imitate, comprehend and produce two-word phrases, the actor-action and action-object phrases are expanded to include all three elements (actor, action, and object) in a single phrase such as "Bobby eats apple."

Throughout the language program, the teacher should administer regular probes. A probe is a test of the child's current ability in a specific area. The probes should be administered individually to each child and the

teacher should not give cues, prompts, or assistance during the presentation of a probe. For example, before training the children on the functional use of objects in Phase 1, the teacher should observe each child individually as he plays with the set of training objects, and record what he does with them. If he does not show at least two instances of functionally appropriate activities with each object, then he should be trained on additional ways to use the objects. After this additional training, the teacher should again observe what the child does with the objects in a test situation. If the child demonstrates functional use of the objects, he should move on to the next phase of training. Otherwise, he should continue training on functional use.

Probes should be given on imitation, comprehension and production before each training phase is begun and at regular intervals during the training period. This will enable the teacher to determine whether or not the child has learned the responses she is trying to train. If the child has not reached criterion on the training items, then training is continued; however, if criterion is reached, the child is moved on to the next phase of training in the program.

Training Actor-Action-Object Structures

Behavior Control Stage

Objectives. The purpose of this phase of the program is to teach the child to sit in a chair and perform simple imitative behavior (e.g. hands on head) modeled by the teacher. This behavior serves as a prerequisite for the formal language training component in which the children work in small groups around a table or at a mirror. Criterion for moving on to Phase 1

of the program is that during a 10 minute probe session, the child will remain in his chair and imitate each of 10 simple motor acts presented by the teacher on two out of two presentations.

Setting. Probes and training should take place in a quiet corner of the classroom.

Baseline probe. The teacher should make up a recording form on which ten motor acts are listed twice each in a random order. She should take the child to a quiet corner of the classroom, seat him in a small chair and present the imitation items one at a time. The child's response should be recorded as appropriate (+), inappropriate (-) or no response (NR). In addition the teacher should record the number of times the child attempts to get out of the chair.

Training. This stage is composed of three basic steps: 1) sitting quietly in a chair, 2) looking at the teacher's face, and 3) performing simple imitative behavior on command. Without establishing these basic prerequisite skills attempting training of more complex skills is generally an exercise in frustration.

Sitting quietly in a chair can be shaped by placing the child in a chair and initially preventing him physically from leaving. In the beginning appropriate sitting for even short periods should be reinforced. As the child's sitting behavior increases the physical constraints should be reduced until the child is sitting quietly for brief periods of time without physical prompts. At this point the second step should be introduced.

The terminal goal of this step is to have the child visually fixate on the teacher's face when told to, "Look at me." For the child who does not do this spontaneously, the teacher should place the child's face between her hands and direct his gaze at her while saying, "Look at me." Initially, brief periods of looking should be reinforced. Gradually the

teacher should reduce her physical prompts and simultaneously reinforce longer periods of looking behavior. The child is ready for the third step when he looks at the teacher's face on command without any physical prompts. The third step is to train simple imitative responses using gross motor behavior. The child should be seated in a chair and told to "Look at me," then a simple response such as ringing a bell should be modeled by the teacher, while she says, "Do this." If the child does not imitate the response, the teacher should physically prompt the behavior. Across trials the teacher should fade the prompts and reinforce all appropriate behavior. When the first response is initated on command, the teacher should introduce a second response such as beating a drum. The same training procedure should be followed as for ringing the bell. This sequence should be repeated until the child spontaneously imitates the ten simple motor acts chosen by the teacher. (For a more detailed discussion of shaping procedures see: Lovaas, 1968).

Data. The number and duration of training sessions as well as the imitative acts which the teacher worked on should be recorded daily.

Training probe. At least once every two weeks a replication of the baseline probe should be administered. The child should reach criterion on the training probe before beginning the formal language program.

Generalization training. Small group activities such as music time or art time should be initiated with children who are receiving training on behavior control. These activities will help to generalize the behavior of sitting in a chair and attending to a designated task to new settings.

Phase 1: Training Functional Use of Objects

Objective. The goal for this phase is for the child to learn the appropriate functional use of each training object in the group being tested. Appropriate functional uses should be predetermined by the teacher.

Criterion for moving on to Phase 2 is that during a 10 minute probe session, the child demonstrates at least two appropriate functional uses of each object.

Setting and Objects. The first setting for the language training program will be the kitchen area. Object Group 1 which is composed of spoon, cup, baby, and pan will be used. Table 3 contains the setting, words, and sounds to be used in each phase of the program. There should be one set of objects for each child in the group and the teacher.

Children. The number of children in the group can vary depending on the competency and manageability of the children. The teacher should compose the groups carefully keeping in mind the level of functioning as well as control problems of each child.

Baseline probe. Before beginning training, the teacher should take each child in the group to the kitchen area individually and place a set of training items on the table in front of the child. If he begins to play with the items spontaneously, the teacher should record his responses on a probe sheet such as the one illustrated on Table 4. Appropriate functional use of the items would include such things as: drinking from the cup, pouring from the pan, stirring with the spoon. Functionally inadequate use would be banging the objects on the table, putting the baby in the pan, and throwing objects on the floor. If the child does not use each item spontaneously, the teacher should hand the child the object and try to elicit responses by asking, "What can you do with this?" Three attempts should be made to elicit a response for each item. Criterion is as stated in the objective, two instances of functional use of each training item. If the child reaches criterion, he should move on to Phase 2. If he does not reach criterion, training should begin with the functional use of objects.

Table 3

Settings, Objects and Sounds Used in Phases 1 - 14

Object Group 1 - Used in Phases 1, 2, 3, 4, 5

Setting: Kitchen

Objects: cup, pan, baby, spoon

Sounds: /k/ in cup; /p/ in pan /b/ in boy; /n/ in net; /u/ in spoon; /æ/ in pan; /eI/ in may; /ʌ/ in cup; /i/ in eat

Object Group 2 - Used in Phases 1, 2, 3, 4, 5

Setting: Selp-help area

Objects: hat, shoe, comb, soap, boy

Sounds: /h/ in hat; /t/ in too; /s/ in soap; /m/ in man; /o/ in soap; /ɔI/ in boy

Object Group 3 - Used in Phases 6, 7, 8

Setting: Picnic area

Objects: wagon, woman, cookie, dog, apple, boat

Action words: eat, ride

Sounds: /w/ in wagon; /g/ in go; /d/ in duck; /r/ in ride; /aI/ in ride; /l/ in apple; /ɔ/ in jaw; /U/ in cook

Object Group 4 - Used in Phases 9, 10, 11

Setting: Sand table

Objects: can, sack, truck, car

Action words: push, pull, fill, hide

Sounds: /ʃ/ in push; /a/ in cot; /I/ in fill; /f/ in food

Object Group 5 - Used in Phases 12, 13, 14

Setting: Doll house

Objects: man, lady, chair, door, window, bed

Action words: sleep, sit, open, shut

Sounds: /ɛ/ in bed; /tʃ/ in chair; /l/ in lady

Table 4

Sample Data Sheet for Probes on Functional Use of Objects (Phase 1)

A. cup - Appropriate functional use (describe briefly) 1. 2. Functionally inadequate responses (describe briefly)
B. spoon -Appropriate functional use (describe briefly) 1. 2. Functionally inadequate responses (describe briefly)
C. pan - Appropriate functional use (describe briefly) 1. 2. Functionally inadequate responses (describe briefly)
D. baby - Appropriate functional use (describe briefly) 1. 2. Functionally inadequate responses (describe briefly)

Training. To train functional use of this set of objects, the teacher should take the group of children to the kitchen area and have them sit around the table. Each child should have a set of objects in front of him. The teacher should demonstrate functional use of the cup by drinking from her cup and then have the children imitate her. If they do not, she should physically prompt the response. If much difficulty is encountered in eliciting imitative responses, the child should be returned to the behavior control stage. Praise should be given for appropriate responses. Other possible uses of the cup (pouring into the pan, etc.) and uses of the other items should also be demonstrated. The use of the objects should be varied in as many ways as possible, and the children prompted to do the same. The teacher should talk about and label the objects frequently as she demonstates their use, but the children should not be required to learn the words either receptively or expressively at this phase.

Data. While a teacher may not be able to record each child's response during training sessions, some indication of how long the children take to learn the appropriate responses can be obtained by recording the number and duration of training sessions.

Training probe. When a child begins to demonstrate appropriate behavior without prompting, a probe in an individual session should be administered. This probe will indicate whether the child is learning the functional use of the objects or simply imitating the teacher and other children. This probe is administered in the same way as the baseline probe and the same recording form can be used. Be sure the child reaches criterion on the training probe before he begins training on Phase 2.

Generalization training. Apart from the specific training periods, the teacher should take every opportunity during the remainder of the child's day to generalize the response learned in the training session to other

activities and environments. In doing the daily planning, opportunities to highlight these new skills should be included. Following are a series of suggested activities which a teacher can incorporate in her daily schedule. These activities are designed to help the child generalize the functional use of the trained objects to new situations.

Group Time

a. The children could be given an exemplar of the object used in training. The teacher or one of the children could demonstrate a functional use, such as drinking from the cup, and the children could be encouraged to imitate either one at a time or altogether.

b. Using two different objects, the teacher could encourage interaction between the children. For example, every other child could have a spoon and the remaining children a baby doll. One child could hold the doll, while the other child feeds it. The objects could then be switched.

c. Each child could have an exemplar of an object and a facilitating object could either be passed around the group or the teacher or another child could walk around demonstrating the functional usage. For example, each child could have a cup, and the teacher or another child could walk around the group with a teapot "pouring" into the cups.

Snack Time

This is an ideal time to demonstrate the functional use of the items in this object group.

a. Each child could have a cup. The teacher could pour water from a teapot into her own cup and then prompt the children to imitate in turn. A teaspoonful of Kool-Aid could then be dropped into each cup and the children encouraged to stir the liquid until all the powder had dissolved. All children could then drink the liquid from the cup. Eventually the children could be taught the entire act of pouring the water, spooning the Kool-Aid, stirring and then drinking.

b. The children could be prompted to give another child (an infant perhaps) a drink from the cup, or a bite from a spoon.

c. Snacks such as raisins or pineapple chunks could be placed in a pan with a lid on it. Before the child could obtain the food, he should remove the lid, spoon out the contents into his own dish, and then replace the lid.

Outdoor Play

Areas such as the water table and the sand box should contain items from the object group. While playing in the sand or the water the children could be encouraged to engage in activities such as spooning

sand into a pan, stirring the contents, replacing the lid, and then "cooking" the sand on a pretend stove. Needless to say, they should be discouraged from eating their creations.

Story Time

The teacher could make up a story about a person in the kitchen fixing something to eat, or the story of Goldilocks and the Three Bears could be used. As the story person is engaged in different activities, the children could demonstrate these activities with the object group items. For example, as Goldilocks eats the porridge, the children could all demonstrate eating porridge with their spoons and pans.

Music Time

A short song could be composed which describes the different functional uses of the items in the object group. Each of the children should have the different items on the floor in front of them. They could then pick out the appropriate item and demonstrate the functional usage in accordance with the words of the song. For example, the song, "This is the way we . . ." can be used to demonstrate ". . .drink our milk"; ". . . stir our tea"; ". . . open the lid" etc.

Free Play

The teacher should encourage the children to play house, make dinner, and eat in small groups, with as little adult intervention as possible. Children in the later stages of the language program who have completed Phase 1 could be encouraged to demonstrate the functional usages in a natural play situation.

Phase 2: Training Verbal Imitation of Sounds

Objective. The goal of this phase is to train basic verbal imitation skills. Criterion for moving on to Phase 3 or 4 (the child can be engaged in Phase 2 and 3 training simultaneously) is during a 10 minute probe session the child will correctly imitate each of the sounds in the group being tested on at least two out of three presentations.

Settings and Sounds. The setting will again be the kitchen area. Sounds to be trained are /k/, /p/, /b/, /n/, /u/, /ʌ/, /æ/, /i/, and /eI/ (see Table 3). These sounds are necessary for the production of the object names to be used in Phases 3, 4, and 5.

Baseline probe. The children should be tested individually before training is begun on verbal imitation. A recording form for this probe

is illustrated in Table 5. The teacher should first get the child's attention, then present the sound to be imitated asking the child to, "Say (sound)." The sounds should be presented in a random order as they appear on the recording form. The teacher should record as follows. If the child produces the sound or some reasonably close approximation, record the sound he makes under (+). If he gives a response which you would not consider acceptable, record the sound he makes under (-). If he makes no response within 15 seconds, check the (NR) column. Criterion is two acceptable (+) imitations of each sound. If the child reaches criterion he should move on to Phase 3. If he fails to reach criterion, the child should be trained on verbal imitation of sounds. In addition, he should be probed on Phase 3 and simultaneous training should be initiated if necessary.

Training. The teacher and the children should sit facing a large mirror in which they can see themselves and each other clearly. The teacher may want to start with a sound which the children produced correctly on the pretest, or another sound she thinks would be easiest for the children to produce. Vowels are usually easier than consonants. Also, /b/ should be an easy sound for many children. The children should be asked to say the first training sound selected. If a child produces the sound correctly or makes a close approximation, he should be reinforced. If he produces a sound that does not even come close to the one presented, the same sound should be repeated. If he still gives an incorrect response, the teacher should look into the mirror with her head beside his and again should ask him to say the sound. This may help him see what he is doing with his own mouth and how that is different from what the teacher is doing with hers. The teacher may want to go back to some motor imitation if the child still is not improving. She could have him press his lips together like he would in producing a /p/ or /b/, and open his mouth as he needs to do when producing vowels. Then he

Table 5

Sample Data Sheet for Probes on Verbal Imitation of Sounds

(Phases 2, 4, 6, 9, 12)

Sound	+	-	NR
1. /u/ in cool			
2. /ʌ/ in cut			
3. /k/ in cat			
4. /n/ in no			
5. /b/ in ball			
6. /æ/ in fat			
7. /i/ in beet			
8. /p/ in pig			
9. /eɪ/ in may			
10. /b/ in ball			
11. /eɪ/ in may			
12. /n/ in no			
13. /ʌ/ in cut			
14. /æ/ in fat			
15. /i/ in beet			
16. /p/ in pig			
17. /k/ in cat			
18. /u/ in cool			
19. /æ/ in fat			
20. /b/ in ball			
21. /eɪ/ in may			
22. /k/ in cat			
23. /p/ in pig			
24. /n/ in no			
25. /i/ in beet			
26. /ʌ/ in cut			
27. /u/ in cool			

would again be asked to imitate the sound while looking in the mirror. The teacher should alternate among children. If one child will not respond at all, it may be effective for her to work with the other children a few moments and reinforce them, briefly ignoring the nonresponsive child. Then she could try to get a response from the nonresponsive child again. The nonresponsive child should not be allowed to play or get up and wander off while the teacher is working with the other children. The verbal imitation portion of training is likely to be the most difficult for the children (and the teacher) so she should be sure to have a reinforcer for each child on hand. Procedures for shaping the individual consonant sounds can be found in Appendix A, Part II.

Data. As in Phase 1 data should be kept on the number and duration of training sessions for each child to reach criterion. This procedure should remain the same for all subsequent training phases.

Training probes. This probe is a repetition of the baseline probe and should be administered individually to each child. The child should reach criterion on a probe before moving on in the program. This procedure should remain the same for all subsequent training phases.

Generalization training. As stressed in the previous phase, the teacher should take every opportunity to elicit and reinforce the occurrence of the specific responses being trained in other activities and settings.

Group Time

a. The teacher could present the stimulus sound in group time and have each child in turn imitate her. This procedure could be combined with motor imitation to produce a sound game. For example, if the sound /n/ is being trained, the teacher could combine the auditory stimulus /n/ with a discrete arbitrary motor response such as touching the lips or nose. The sound /k/ could be combined with a clap or touching the throat.

b. The teacher could introduce new words which begin with the sound being trained. The words could be introduced by presenting pictures or objects during group time, and having the children repeat the

initial sound. The teacher may also introduce the grapheme (letter) which represents the sound.

Snack Time

The children should learn to recognize and verbalize the names of the foods and drinks which are commonly used for snacks. The teacher could use a food and/or drink which contains the sound being trained. For example, if the sound /k/ is being trained, snacks might consist of Kool-Aid, milk, cookies, or cake.

Story Time

The teacher could make up a story in which the target sound occurs frequently and in a context which might encourage the children to imitate. For example, the story about the sound /k/ might contain a crow that says "caw-caw" and a mouse that says "eek-eek."

Music Time

When working on vowel sounds the children could be encouraged to sing along using the vowel sound instead of saying the words which they probably cannot do anyway.

Phase 3: Training Comprehension of Nouns

Objective. The purpose of this phase is to train initial comprehension skills. Criterion for moving to Phase 4 is that during a 10 minute probe session the child will correctly choose each of the objects in the group on at least two out of three requests. As training on this phase can be conducted simultaneously with Phase 2, the teacher should be sure that the child meets criterion on both phases before moving on to Phase 4.

Setting and Object. The setting and objects are the same as for Phase 1.

Baseline and training probe. Prior to initiating training on comprehension of the object labels, a probe should be given and each child's responses recorded on a form similar to that illustrated in Table 6. The teacher should administer the probe to each child individually by placing the four test objects in front of him and saying, "Give me (show me, point to, touch, etc.) the (object label)." The teacher should request each of the four objects three times in a random order as listed on the recording form. If the child selects the labeled object, the teacher should check the (+) column; if he

Table 6

Sample Data Sheet for Probes on Comprehension
(Phases 3, 7, 10, 13)

Stimuli	+	-	NR
1. baby			
2. cup			
3. spoon			
4. pan			
5. cup			
6. spoon			
7. baby			
8. pan			
9. baby			
10. spoon			
11. cup			
12. pan			

selects an incorrect object, the (-) column should be checked. Failure to respond within 15 seconds should be indicated in the (NR) column. Criterion performance on the probe is the correct selection of each object two times. If the child reaches criterion, he should move to training on verbal imitation of words (Phase 4). Otherwise, he should be trained on this phase.

Training. The children should be seated around the table with their objects in front of them. The teacher should ask them to select the objects one at a time, varying her requests to include such phrases as "touch," "point to," "show me," "get," "take," "give me," or "find." She may begin teaching a new word-object association by placing only one item in front of each child and asking them to touch that object. Imitation and physical prompts should be used if necessary. When the children are touching the first training object on command, a second object should be placed on the table so that the children must make a choice from among two objects. This procedure should be continued until all objects are displayed. The children should be allowed and encouraged to play with the objects in a functionally appropriate way after they have selected the correct object, and the teacher should continue to label the items frequently as the children play with them. If a child has difficulty learning the association between the object and its name, the child should be allowed to use the object functionally as the teacher names the object.

Generalization training. Many of the suggestions for generalization training given in Phase 1 are also appropriate for training generalized comprehension. Once a child has learned to attach a verbal label to an object, the teacher could begin to expand the class of objects encompassed by that label. For example, if the object used to train cup has been a white coffee cup, other cups of varying size, shape and color should be used to broaden his concept of cup. The lateralization program for Object

Group 1 which is presented in Appendix B can be used beginning with this phase. These new objects are to be trained in the same manner as the other objects.

Group Time

a. The children could each be given two different objects (e.g., cup and spoon). The teacher could ask everyone to hold up the cup and then she could demonstrate drinking from the cup. Gradually she should discontinue the demonstration and use only the verbal cues.

b. The children could be given different objects from the same object group. The teacher could then ask all children holding a particular object to stand up or go to the table. This activity could be used as a method of getting the children to the table for snacks.

Snack Time

The children should be required to take their own cup and spoon off a tray as the teacher gives the verbal label.

Outdoor Play

A game of running could be used to generalize comprehension of object names. The objects could be placed in different parts of the play area within sight of the children. The teacher could call out the names of the objects and the children could run to get them.

Phase 4: Training Verbal Imitation of Nouns

Objective. The purpose of this phase is to extend the imitation skills learned by the children during Phase 2. Criterion for moving on to Phase 5 is that during a 10 minute probe session the child will correctly imitate each of the words in the group being tested on at least two out of three presentations.

Setting and words. This training can take place in the kitchen area or a corner of the classroom with a mirror. The words represent the objects trained in Phase 1.

Baseline and training probes. Replicate the procedure used in Phase 2 only substitute words in place of the sounds (see Table 5).

Training. Replicate the procedure used in Phase 2 with the noted additions. If the teacher is not able to elicit any reasonable approximation

to the word she is training in several trials, she may try breaking the word down into units. For instance, for the word "cup," she might have the child say /kʌ/ first, and then /p/. After he is imitating these two response units consistently, the length of time between the presentations of the stimuli would be gradually shortened until they become a single unit /kʌp/. Alternately, she could try teaching the child to say /ʌp/ first and then go on to /k/ - /ʌp/ to /kʌp/. The goal is not perfect imitation, but some reasonably close approximation (e.g., "poon" for "spoon") to the word being trained. Suggested procedures for teaching some of the words used in the language program can be found in Appendix A, Part III.

Generalization training. Some of the activities which were presented in Phase 2 are also appropriate for this training phase. Words and objects from the lateralization program should also be used (see Appendix B).

Phase 5: Training Single Word Production of Nouns

Objective. The purpose of this phase of the program is to teach the children to combine the skills learned in Phases 3 and 4 so that they are producing single word labels for objects. Criterion for moving on to the next phase is that during a 10 minute probe session the child correctly labels each object in the group at least two out of the three times it is presented.

Setting and words. The setting and words are the same as used in Phase 4.

Baseline and training probes. The form for the probes is illustrated in Table 7. Each child should be tested individually. The teacher should hold the object up and ask, "What's this?" Any correct label or acceptable approximation to the correct response should be scored as (+); incorrect responses as (-), and failure to respond in 15 seconds as (NR). Criterion is an acceptable response two of the three times each item is presented.

Table 7

Sample Data Sheet for Probes on Production

(Phases 5, 8, 11, 14)

Words	Response		
	+	-	NR
1. cup			
2. pan			
3. spoon			
4. baby			
5. cup			
6. baby			
7. spoon			
8. pan			
9. baby			
10. cup			
11. spoon			
12. pan			

Training. The teacher should hold up one of the objects and ask, "Who knows what this is?", or "Michael, what is this?" etc. Children who give no response or an incorrect response should be prompted by having them imitate the correct label. After the children have labeled the object, the comprehension and functional use phases of training should be reveiwed by having the children pick up the object and play with it in an appropriate manner. The children do not have to produce the word perfectly, but they should be trained until they produce reasonably intelligible approximations.

Generalization training. The teacher should use every opportunity throughout the day to ask the children the names of the objects being trained. Most of the activities which have been suggested in the earlier phases are also appropriate for this phase.

Recycle Training with Object Group 2

Using the setting, objects and sounds given in Table 3 for the second object group, repeat the training specified in phases 1 through 5. The length of time needed to train this second group of objects should be less than with the first object group. The setting for Object Group 2 is the self-help area and the objects are: hat, shoe, soap, comb and boy. The sounds for this group are: /h/, /t/, /s/, /m/, /o/, and /ɔɪ/.

Phase 6: Training Verbal Imitation of Verbs

Objective. The goal of this phase is to teach the child to correctly imitate verbs following a model presented by the teacher. Criterion for moving on to Phase 8 (Phase 7 may be trained at the same time as this phase) is that during a 10 minute probe session the child will correctly imitate each verb being tested on at least two out of three presentations.

Setting and words. The third object group (see Table 3) is used in this phase. The setting is the picnic area and the training objects are: wagon, woman, cookie, dog, apple, and boat. The action words are eat and ride. Training sounds are /w/, /g/, /d/, /r/, /aI/, /l/, /ʊ/, and /ɔ/. Before beginning training on Phase 6, children should be taught to produce the nouns used in this object group (see Phases 1 through 5).

Baseline and training probes. The probe procedure is the same as that used in Phase 4 except the stimulus items change. Record the childrens' responses on a form similar to the one found in Table 5, testing the verbs instead of the nouns.

Training. Follow the same procedure outlined for Phase 4. Suggested procedures for teaching words can be found in Appendix A, Part III.

Generalization training. The teacher should take every opportunity to have the children imitate the training words whenever an appropriate situation occurs. Other words of similar phonetic content can be found in the lateralization program. The teacher should have the child imitate these words also. This will help him learn to say the same sounds in new combinations. Mirror training may also be valuable during this phase. The teacher should encourage the child to imitate her throughout the day.

Phase 7: Training Comprehension of Verbs

Objective. The purpose of this phase of the program is to teach the children to comprehend action words. Criterion for moving on to Phase 8 is that during a 10 minute probe session the child will demonstrate through appropriate action each of the verbs being tested on two out of three requests.

Setting and words. The setting and words are the same as used in Phase 6.

Baseline and training probes. A probe should be given on the comprehension of action words "eat" and "ride." The cookie, apple, boat, and wagon should be placed on the table and the child given either the dog or the woman. The teacher should then say, "Make it eat," or "Make her ride." Each of the verbs should be tested three times with the order of the verbs and actors presented being randomized. The data should be recorded on a form similar to the one illustrated in Table 6. If the child does not demonstrate each item correctly two times, he should be trained on comprehension of verbs. If he reaches criterion on this phase he should be probed on Phase 8. Since the child can be involved in training on Phase 6 and 7 simultaneously, the teacher should be sure he has reached criterion on both phases before moving on to Phase 8.

Training. The training should be basically a replication of Phases 1 and 3 using motor imitation and physical prompts until the child demonstrates that he can discriminate between "eat" and "ride" by manipulating the toys in an appropriate manner based on the teacher's verbal command.

Generalization training. Again the teacher should attempt to maximize the child's learning by having alternative training stimuli available in the classroom (e.g., other dogs and boats) both in the form of objects and pictures. By having these stimuli available opportunities should arise when the teacher can ask a child to get the "apple," point to the "boat," or bring me the "wagon." The children could collect pictures of people and animals from the lateralization program eating different foods and riding in various types of vehicles. The children can be taught to discriminate between the actions. When the children have learned to make this discrimination, group time can be used to generalize the concepts. For example, each child could hold a picture which depicts eating and a second

which depicts riding. The teacher then could request that the children hold up the picture of eating or riding. Each child's job would be to hold up the appropriate picture depending on the verbal cue given by the teacher. Another game could be played by placing all the pictures in a pile on the floor. The teacher could then request a child to find a picture of "eat." The child should pick an appropriate picture and place it on the felt board.

Phase 8: Training Production of Verbs

Objective. The goal of this phase is to teach the child to combine the skills he learned in Phases 6 and 7 in order to spontaneously label actions which occur in their environment. Criterion for moving on to the next phase is during a 10 minute probe session the child will correctly label each action (verb) demonstrated by the teacher at least two out of the three times presented.

Setting and words. The setting and words are the same as used in Phase 6 and 7.

Baseline and training probes. The teacher should probe the child's skill on this phase by demonstrating an activity (e.g., the dog eating the cookie) and asking the child, "What's it doing?" The child should respond with some form of the correct verb such as "eating," "eat," or "eats." Each verb should be tested three times following a random presentation. The child's responses should be recorded on a form similar to the one in Table 7. If the child does not reach criterion on this phase, training should be initiated.

Training. Training is similar to what was done in Phase 5. The teacher should demonstrate an activity with the objects or have one of the children do so, and then ask, "What's it doing?" or "What's going on?" Children who do not give appropriate responses should be asked to imitate the response, and the imitative cues then gradually faded.

Generalization training. By now it should be clear that generalization of a response learned in a special training session to other settings is a major focus of this program. Once the child can produce the correct label for an object without prompting, the next step should be to help him generalize the use of the label to other objects in the same class and to other environments. The teacher must be alert to all opportunities for the child to vocalize his wants. In other words the child's speech production should be made functional so he has a reason to talk. Use the lateral training program in Appendix B to increase the child's word repertoire.

Phase 9: Training Imitation of Two Word Phrases

Objective. The goal of this phase is to teach the child to imitate two word phrases consisting of a noun and verb, which he has previously learned to produce in isolation. Criterion for moving on to Phase 11 (Phase 10 may be trained at the same time as this phase) is that during a 10 minute probe session the child correctly imitates each two word phrase being tested at least two out of the three times it is presented.

Setting and words. The setting, objects and action words from the fourth object group (see Table 3) are used in Phases 9, 10, and 11. The setting is the sand box area and the objects are: car, truck, can, and sack. The action words are: fill, hide, push, and pull. Training sounds are: /ʃ/, /f/, /ɑ/ and /I/. Before beginning training on Phase 9 children should be taught to produce the nouns and verbs as single word utterances (see Phases 1 through 8).

Baseline and training probes. The probe procedure is the same as used in Phases 4 and 6 except the stimulus items are different. The teacher should not combine each verb with each object as this will make the probe unnecessarily long. Only items which make sense should be combined ("pull can" or "fill car" do not). Two exemplars of each verb should be selected

and presented in combination three times in a random order. The child's responses should be recorded on a form similar to the one found in Table 5.

Training. The same basic procedure outlined in Phase 4 should be followed. The children should be able to imitate each of the words separately (Phase 4 and 6); however, articulation skills may break down when the child attempts to imitate a two word utterance. If this occurs, the response should be broken into two units. For example, the phrase "hide car" can be given one word at a time. When the child imitates these two response units consistently, the length of time between the presentation of the stimuli should be shortened until they are imitated consecutively.

Generalization training. As mentioned earlier, imitation of the teacher's utterances should be encouraged in the classroom situation. If the child spontaneously imitates a word, the teacher should immediately repeat his word and use other simple words to expand the utterance. This procedure should be done in terms of a relevant on-going activity so the phrase has some meaning to the child. An example of such a dialogue follows: Teacher, "Okay children, time to go outside." Child, "Outside." Teacher, "Outside, yes. Go outside. Say go outside."

Phase 10: Training Comprehension of Two Word Phrases

Objective. The purpose of this phase is to teach the children to comprehend two word phrases consisting of a noun and verb, which they previously learned to comprehend in isolation. Criterion for moving on to Phase 11 is that during a 10 minute probe session the child correctly demonstrates the actions appropriate for each of the two word phrases being tested at least two out of the three times requested.

Setting and words. The setting and words are the same as used in Phase 9.

Baseline and training probes. A probe should be administered on the comprehension of the verb plus object phrases. The four objects should be placed on the table and the teacher should say, "Fill truck" (be sure there are beans, rice, or sand around in order to carry out the activity) or "Hide can." Each of the four verbs should be combined with two objects three times in random order. This will result in a probe of 24 stimulus items. The child's response should be recorded on a form similar to the one illustrated in Table 6.

Training. At first the children should be given only one object with which to demonstrate the appropriate action. For example, the teacher should give the child a truck and some rice and say "Fill truck." Once the child is doing this consistently the teacher should give the child a second object, e.g. sack. She should then ask him to do the appropriate action with the second object, e.g. "Fill sack." She should prompt him if necessary to make the discrimination between the objects. When the child correctly chooses between two objects, the teacher should introduce a third object in the same manner. After the child can demonstrate one appropriate action (verb) with all appropriate objects, the teacher should introduce a new action word and the same sequence initiated. The teacher should use this procedure to teach all four verbs. She should be sure that the child can discriminate between two objects before introducing a third. Finally the child should be taught to choose from all four objects and execute one of four actions. Once again the teacher should not start with all four at once but with two and as the child masters this then three and so on.

Generalization training. Procedures for generalizing comprehension of two word action-object phrases should become part of the daily classroom and home routine. In both group time and snack time, children should be given simple requests to carry out. For example, at group time using the

objects from Object Group 4 and the lateralization program (see Appendix B) a child could be asked to demonstrate "roll ball," or "hide bus." Older children could be used to demonstrate or give commands. When the children are outside, a game of Follow-the-Leader or Simon Says could be used to demonstrate outdoor activities, e.g., "empty pail" or "push bike."

Phase 11: Training Production of Two Word Phrases

Objective. The purpose of this phase is to teach the child to spontaneously produce two word phrases consisting of a noun and a verb, which they previously learned to produce in isolation. Criterion for moving on to the next phase is that during a 10 minute probe session the child will correctly label, using a noun and a verb, an action performed by the teacher at least two out of the three times it is demonstrated.

Setting and words. The setting and words are the same as used in Phases 9 and 10.

Baseline and training probes. The probe procedures are the same as used in Phases 5 and 8, except the stimulus items are different. Each verb should be presented in combination with two different objects three times in a random order. The teacher should demonstrate an activity (filling truck) and then should ask the child, "What am I doing?" or "What's happening?" The child's response should be some form of the correct verb combined with the correct object (e.g., "fills truck," "filling truck," or "fill truck"). The child's responses should be recorded on a form similar to the one found in Table 7. If the child does not give at least two appropriate responses for each verb plus object combination, he should be trained on this phase.

Training. The teacher should demonstrate an activity and ask the children "What am I doing?" The teacher should get the children who do not respond correctly to imitate the appropriate verb and object phrase (e.g., "fill can"). Also the teacher could let a child demonstrate the action with the same object and ask the other children what he's doing. She should

prompt appropriate responses by using imitation. The teacher should begin using one object and one verb, then add another and so on. Then she should introduce another object with one verb, two verbs, etc. The two objects should be alternated with the appropriate verbs. The third and fourth objects should be added in the same manner until children can identify any of the four objects with verbs which are appropriate for that object.

Generalization training. The child must be taught to generalize production of two word responses to the classroom and to other environments. One advantage of the two word action-object phrase is that it constitutes a command which can be reinforced. At group time the teacher could choose one child to be a leader for the day, and a game could be devised in which the other children followed his requests. Toys and snacks could only be given if the child verbalizes his wants. If he is unable to do so, provide him with the appropriate verbal stimulus to imitate. Gradually fade the verbal prompts. Encourage the children to use words from the lateralization program (see Appendix B) to expand their production repertoire.

Phase 12: Training Imitation of Three Word Phrases

Objective. The purpose of this phase is to teach the child to imitate three word phrases consisting of an actor, an action and an object, which they previously learned to imitate in isolation or as two word phrases. Criterion for moving on to Phase 14 (Phase 12 and 13 can be trained simultaneously) is that during a 15 minute probe session the child correctly imitates each three word phrase presented by the teacher on at least two out of three presentations.

Setting and words. The setting, objects and action words from the fifth object group (see Table 3) are used in Phases 12, 13, and 14. The setting is the doll house and the objects are: man, lady, chair, window, bed, and door. The sounds to be trained are: /l/ /tʃ/, and /ɛ/. The action words are: sit, sleep, open and shut. The children should be given training with this object group on Phases 1 through 11 prior to beginning Phase 12. When training on two word phrases with this object group, use both action-object phrases ("sit bed," "open window") and actor-action phrases (e.g., "man sleep," "lady sit," "lady shut," etc.).

Baseline and training probes. The probe procedure is the same as used in Phases 2, 4, 6, and 9. The stimulus items are different and now are three word phrases. A probe which combines each actor with each action and object is unnecessarily long, and some of the verb-object combinations do not make sense ("man open chair"). Therefore, using only those combinations which make sense, the teacher should pick two exemplars of each verb, combine them with actors and objects and present them three times in random order. For example, the stimulus items for the verb "sit" might be "man sit chair," "lady sit bed;" the stimulus items for the verb "sleep" would be "man sleep bed," "lady sleep bed" (the verb "sleep" is most appropriate for the object "bed"). Record the child's responses on a form similar to the one found in Table 5.

Training. The training is the same as previous imitation training, except three word phrases are trained. Articulation skills may break down, as well as memory skills (i.e. the children may forget one or two of the words in the stimulus). When this occurs, the teacher should break the longer response into shorter units until the child can imitate these consistently, and then gradually combine them again into the longer verbal units.

Generalization training. Generalization procedures which have been described in previous imitation phases may be used. The teacher should take every opportunity to let the children act as the teachers for other children in this phase and earlier imitation phases.

Phase 13: Training Comprehension of Three Word Phrases

Objective. The purpose of this phase is to teach the child to comprehend three word phrases consisting of an actor, an action and an object which they have previously learned to comprehend in isolation and as two word phrases. Criterion for moving on to Phase 14 is that during a 15 minute probe session the child will perform the actions indicated for each three word phrase presented by the teacher on at least two out of three requests.

Setting and words. The setting and words are the same as described in Phase 12.

Baseline and training probes. Probes are administered on the comprehension of the actor-action-object phrases. The teacher should place all the objects on the table in front of the child and ask the child to demonstrate the phrases described in Phase 12. Record the child's responses on a form similar to the one illustrated in Table 6.

Training. Beginning with lady, man, and chair, the teacher should say, "Make lady sit chair." and prompt the response if necessary. She should alternate "Lady sit chair." and "Man sit chair." When the child can respond correctly without prompts three times to these phrases, the procedure should be repeated with "Lady sleep bed." and "Man sleep bed." Then "Lady sit chair." and "Man sleep bed." should be alternated. The teacher should repeat the above procedure using a window and a door. She should say, "Lady open window." giving the child the lady and pointing to the closed window. The "lady" and "man" followed by "open window" should be alternated. The procedure should be followed with "Lady (or man) shut window." Then commands to open and shut

window should be alternated. Finally the procedure should be repeated with opening and closing the door. Lastly, all commands should be alternated offering lady, man, bed, chair, window, and door to the child.

Generalization training. Most of the activities described in earlier phases for generalization of comprehension are appropriate for three word phrases.

Phase 14: Training Production of Three Word Phrases

Objective. The purpose of this phase is to teach the child to use three word phrases consisting of an actor, an action, and an object to describe an activity demonstrated by the teacher. The children will have previously learned to produce these words in isolation or two word phrases. Criterion to complete this final phase of the language program presented in this volume is that during a 15 minute probe session the child will correctly label with a three word phrase each action demonstrated by the teacher on at least two out of three times it is presented.

Setting and words. The setting and words are the same as used in Phases 12 and 13.

Baseline and training probes. The probe procedures are the same as used in Phases 5, 8, and 11 except the stimulus items are different. Using the phrases compiled in Phases 12 and 13, demonstrate the activity for the child and ask, "What am I doing?" or "What's going on?" The child's response should consist of the correct actor, a form of the correct verb (e.g.,"sit," "sits," or "sitting") and the correct object. Each item should be presented three times in a random order, and the child's responses should be recorded on a form similar to the one in Table 7.

Training. Training proceeds in the same manner as Phase 11. Beginning with two actors (lady and man), one action verb (sit) and one object (chair), the teacher should have the child produce the appropriate phrase for

either "Lady sit chair." or "Man sit chair." when requested, "What's going on?" As in Phase 13 the procedure should be repeated alternating "lady" and "man" with "sleep bed"; then "lady" and "man" with "sleep bed" and "sit chair." The same procedure should be followed with "open window" and "shut window" then "open door" and "shut door." Finally commands should be alternated using all objects. If the child is unable to produce a phrase spontaneously, the teacher should have him imitate the three word phrase. Gradually she should fade the verbal cues.

Generalization training. Every opportunity in the classroom and at home should be used to encourage the child to verbalize. The three word phrases the child is now producing are descriptions of everyday occurrences in his environment. Both teacher and parent can continually point out actions in picture books, on television, and in the home and classroom, and ask the child, "What's happening?" "What's he doing?" and other appropriate eliciting phrases. The children should be encouraged to talk to the other children in the program and their siblings.

Summary

If a child moves successfully through the program he will be able to understand and produce at least some three word actor-action-object constructions. Reaching this goal will be a major accomplishment for many children. Other youngsters will be able to progress far beyond the three word utterance stage to the use of articles, modifiers, prepositions and even learning negative, passive and interrogative transformations. For children who are ready to move on we recommend the teacher examine several potentially useful programs which we have listed below.

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Appendix A

Procedures for Teaching Verbal Imitation

Part I

Description of Speech Sound Production

Part II

Shaping Sound Production

Part III

Shaping Word Production

Laura Dennison

Learning to shape individual speech sounds in a young child is perhaps one of the more formidable tasks faced by the teacher or parent. We take speech so much for granted and give little thought to how we talk until we are confronted with a person who has difficulty speaking. Because we know so little about how our own speech mechanism works, we find it difficult to analyze exactly what our tongue, teeth, and lips are doing to make that particular sound. Helping another person talk then becomes a frustrating and unpleasant experience.

This appendix is included to provide some insight into the mystery of speech sound production. Part I describes each of the major consonant sounds in terms of what we do to make them. Part II gives suggestions for teaching those consonants to another person. You will find in Part III, several flow charts which describe how to combine sounds into words. This is included to give you ideas about how to approach the teaching of words. This appendix is neither authoritative nor complete. Such a volume does not exist. These are suggestions which we have discovered work with some of our children.[1]

One last bit of advice: teaching another to talk can be extremely slow and tedious. However, following the procedures outlined below should result in progress by the child. If you see no progress after several weeks, you may need to consult a speech pathologist.

[1]Another source for training speech sound production is Nemoy & Davis, 1972.

Part 1: Description of Speech Sound Production

All consonants in American English[1] are classified according to three important features necessary for the pronunciation of each sound. These features are:

a. placement of the tongue, teeth, and lips
b. manner in which the air stream from the lungs is directed out of the mouth or nose
c. whether or not the voice is used

Placement

Placement refers to the positions of the tongue, teeth and lips during speech. Pronounce the words "cape" and "tape." At the beginning of "cape" the back of the tongue makes contact with the roof of the mouth; at the beginning of "tape," the tip touches behind the upper teeth. The other physical details are the same for the two words.

There are seven basic positions of the tongue, teeth and lips in the production of consonant sounds. These positions are as follows:

a. Bilabial, in which the lips are the most important factor. In all bilabial sounds, the lips meet. Examples: p, b, m, w.
b. Labiodental, in which the upper teeth meet with the lower lip. Examples: f, v.
c. Lingua-dental, in which the tip of the tongue touches the teeth. Examples: ð and θ.
d. Lingua-alveolar, in which the tip of the tongue touches the roof of the mouth right behind the upper teeth. Examples: n, d, t, z, s, dʒ, tʃ, r, l.
e. Lingua-palatal, in which the tip of the tongue touches the roof of the mouth further back from the upper teeth. Examples: ʒ, r, ʃ, j.
f. Lingua-velar, in which the back portion of the tongue raises to meet the roof of the mouth. Examples, k, g, ŋ.
g. Glottal, in which the sound begins back in the throat. Example: h.

Manner

Manner refers to how the breath stream is released for each sound. Pronounce the words "bat" and "mat." At the beginning of "bat" the air

[1] See Table 1 for a listing of these consonants and a sample word containing the sound.

is compressed in the mouth, then suddenly released with a gentle explosion. At the beginning of "mat," there is no compression and the air flows out the nose in a smooth stream. The/b/is called a stop and/m/is called a continuant. These are the two primary manners of air release: stops and continuants.

a. Stops, in which the air is compressed, then suddenly released. Examples: p, b, t, d, k, g.
b. Continuants, in which the air flows steadily out of the mouth or nose with little plosive or abrupt qualities. All consonants which are not stops are continuants. Continuants may be subdivided into four categories:

    1. Nasals, in which the air stream is directed out through the nose. Examples: m, n, ŋ.
    2. Fricatives, in which a friction noise is made as the air passes over the tongue or through the teeth. Examples: v, f, ð, θ, z, s, ʃ, ʒ, h.
    3. Affricatives, in which the air is initially compressed but then released as a fricative. Examples: dʒ, tʃ.
    4. Semi-vowels, in which the air freely escapes from the mouth with no obstruction. Examples: w, r, l, j.

Voicing

Voicing refers to the use of the vocal cords in the production of a sound. Place your hand on your throat. Pronounce the words "Sue" and "zoo," extend the first sound for a while before completing the word. At the beginning of "Sue," you are not using your vocal folds and you will not feel any vibrations until you complete the word. This is because the /s/ is a voiceless sound. At the beginning of "zoo," however, you will feel vibrations at the very beginning of the /z/sound, because you use your vocal cords in this sound. We say that /z/ is a voiced sound. Consonants are either voiced, in which the vocal cords are used, or voiceless, in which no sound is produced by the vocal cords.

a. Voiced sounds: b, d, dʒ, g, j, w, v, ð, z, l, ʒ, r, m, n, ŋ.
b. Voiceless sounds: p, t, tʃ, k, f, θ, s, ʃ, h.

See Figure 3 for a diagram of the parts of the mouth used in producing the various sounds.

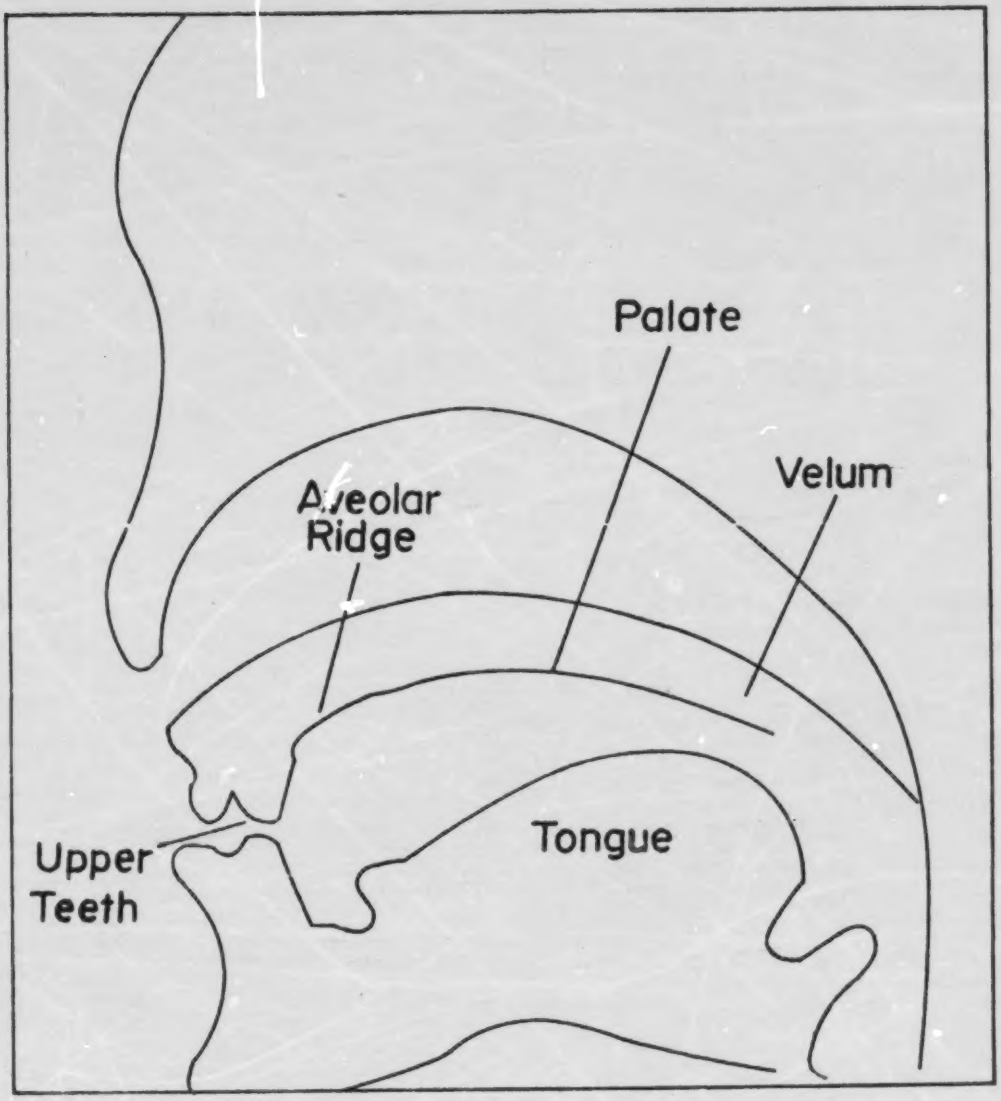


Figure 3. Illustration of the articulators used to produce speech sounds

Consonant Production

Correct pronunciation is dependent upon many factors. First, we must have a good source of energy for the voice. As we breathe out, the stream of air from the lungs becomes the power source for all our speech sounds. This air vibrates our vocal cords as it passes by them. The vocal cord vibrations make a noise which is carried by the air stream into our mouth.

When the air stream enters the mouth from the throat, it passes over the tongue and the teeth and out through the lips. By changing the positions of the tongue, teeth and lips, we are able to make the different sounds in the English language.

The following is an explanation of how the consonant sounds are made. Try to produce each sound as you read the description.

b The lips are closed together. Air pressure is allowed to build up inside the mouth. This air is suddenly released through the lips. At the same time, the vocal cords are put into motion. /b/ is a voiced bilabial (place the lips together) stop.

p Same as /b/, only the vocal cords are not used. /p/ is a voiceless, bilabial stop.

d The tip of the tongue is pressed against the upper gums. The sides of the tongue touch the side teeth. The teeth are slightly separated. Air pressure is allowed to build up behind the tongue. The tongue is suddenly dropped and the air escapes with an explosive sound. The vocal cords vibrate. /d/ is a voiced lingua-alveolar stop.

t Same as /d/, only the vocal cords are not used. /t/ is a voiceless lingua-alveolar (tongue to front roof of mouth) stop.

g The back part of the tongue is arched against the roof of the mouth, and air pressure is allowed to build up in the throat behind the tongue. The teeth are slightly separated and the tip of the tongue is pressed against the bottom teeth. The back part of the tongue is lowered suddenly and the air escapes with an explosive sound. The vocal cords vibrate simultaneously. /g/ is a voiced velar stop.

k Same as /g/ only the vocal cords are not used. /k/ is a voiceless velar (tongue to back of mouth) stop.

m The lips are closed tightly and the velum, or soft part of the roof of the mouth, is lowered to allow the air to escape through the nose. The vocal cords vibrate. /m/ is a voiced bilabial nasal (air stream sent through the nose) continuant.

n The tongue position is similar to /t/ or /d/. The tip of the tongue is pressed against the upper gums. The sides of the tongue touch the side teeth and block the air from coming out of the mouth. The velum is lowered and the air is allowed to escape through the nose. The vocal cords vibrate. /n/ is a voiced lingua-alveolar nasal continuant.

ŋ (ng) The position of the tongue is the same as /g/ or /k/. The back of the tongue is raised against the velum to block the air from coming through the mouth. The velum is lowered a bit to allow the air to escape through the nose. The vocal cords vibrate. /ŋ/ is a voiced velar nasal continuant. This sound occurs only in the middle and at the end of words.

f The lower lip lightly touches the edges of the upper teeth. The tongue rests in the mouth. The breath is blown gently between the lip and the teeth. The vocal cords do not vibrate. /f/ is a voiceless labio-dental fricative.

v The position of the tongue is the same as /f/. The vocal cords vibrate. /v/ is a voiced labio-dental fricative.

θ (th) The tip of the tongue is widened and held lightly between the upper and lower teeth, so that it can be seen just slightly. The tongue is flat and fills in the space between the upper and lower side teeth. The lips are open and relaxed. Air is blown over the top of the tongue. The vocal cords do not vibrate. /θ/ is a voiceless lingua-dental fricative.

ð (th) Same as /θ/ only the vocal cords are vibrated. /ð/ is a voiced lingua-dental fricative.

s There are three ways to make an /s/. The two most common positions will be described.

1. The front part of the tongue is widened and placed close to the upper gum ridge. The sides of the tongue touch the upper side teeth which are opened slightly. The air is directed down a central goove in the middle of the tongue producing a hissing sound. The vocal cords do not vibrate.
2. The tip of the tongue is placed against the lower teeth. The middle of the tongue is still up and contains a central groove which directs the air. /s/ is a voiceless, lingua-alveolar fricative.

z Same as /s/ only the vocal cords are vibrated. /z/ is a voiced lingua-alveolar fricative.

ʃ(sh) The tongue position is very similar to the/s/ position, except that it is drawn slightly farther back in the mouth. The air stream is directed down the center of the tongue. The lips are slightly protruded and the cheeks are in close contact with the side teeth to prevent the air from escaping around the sides of the tongue. The vocal cords do not vibrate. /ʃ/ is a voiceless lingua-palatal fricative.

ʒ(zh) The tongue position is the same as for /ʃ/. The vocal cords are vibrated. /ʒ/ is a voiced lingua-palatal fricative.

h The lips and teeth are parted and the tongue is down. The air stream is directed through the vocal cords producing a friction sound but they are not vibrated. /h/ is a voiceless glottal fricative.

tʃ(ch) The tongue position is similar to /t/ except farther back in the mouth. The sides of the tongue touch the side teeth and momentarily block the air stream. The lips are slightly protruding and the teeth are almost closed. The tip of the tongue is suddenly moved forward just a little, releasing the blocked air. The vocal cords do not vibrate. /tʃ/ is a voiceless, lingua-alveolar affricative.

dʒ(j) The tongue, teeth and lip positions are the same as in /tʃ/. The vocal cords vibrate. /dʒ/ is a voiced lingua-alveolar affricative.

ʍ(wh) The lips are rounded and slightly protruded. The teeth are slightly separated. The breath stream is directed through the lips. The tip of the tongue touches the lower teeth. The vocal cords do not vibrate. /ʍ/ is a voiceless bilabial semi-vowel.

w The tongue, teeth and lip positions are the same as in /ʍ/, except the vocal cords are vibrated. /w/ is a voiced bilabial semi-vowel.

r There are many ways to make a correct /r/ sound. Most often the /r/ is made as follows: The back of the tongue is close to the roof of the mouth. The sides of the tongue touch the side teeth. The tip of the tongue which is spread wide and thin, is drawn back from the teeth much like the position of the tongue during the "uh" sound. Some people cup the tip of the tongue upward and others do not. The air stream is directed over the tongue and across the tip. The lips are relaxed and the teeth are slightly apart. The vocal cords vibrate. /r/ is a voiced lingua-alveolar semi-vowel.

l The tongue tip is broadened and is lightly pressed against the gum ridge just behind the upper teeth. The sides of the tongue do not touch the side teeth. The air stream flows around the sides of the tongue. The vocal cords vibrate. /l/ is a voiced lingua-alveolar lateral semi-vowel.

j(y) The middle part of the tongue is raised and widened as in making an "eee" sound, only farther back in the mouth. The tongue tip is lowered and the teeth are separated slighly. The vocal cords vibrate. /j/ is a voiced palatal semi-vowel.

Part II: Shaping Sound Production

SHAPING PROCEDURES FOR K

Procedure 1

a. Sometimes it is easier for a child to produce a /k/ sound with the vowel /i/. Hold the tip of the child's tongue down with a tongue depressor or a spoon and have him imitate /i/.

b. When he is able to do this, have him imitate /ki/, /ik/, or /kikiki/.

c. If he can do this, work on gradually fading all physical prompts until he can produce /ki/ or /ik/ by himself.

d. Train the child to produce the /k/ in isolation by stressing the production of the /k/ and fading the /i/.

Procedure 2

a. Have the child imitate a cough.

b. Have him imitate a gentle cough.

c. When the child can do this, have him imitate the /k/.

Procedure 3

a. Using a feather to demonstrate air coming out of the mouth, have the child make the feather move while imitating an extended /h/ sound. Be sure his mouth is open and his lips are not rounded.

b. Now using the feather to illustrate the air puffs coming out of the mouth, have the child imitate /kʌkʌkʌ/.

c. If he is able to do this, work on imitation of /kʌ/ or /k/ by covering the child's mouth after the initial sound. Gradually fade the physical prompt.

Procedure 4

a. Have the child produce the sound that children often make when imitating an explosion or gun shots. You can feel the back of your throat vibrating.

b. When the child can imitate this sound, have him produce short bursts of this noise.

c. When he does this correctly, have him imitate the /k/ sound.

SHAPING PROCEDURE FOR P

Procedure 1

a. Have the child imitate opening and closing of the lips without any breath production. The lips should not be rounded.

b. When he can imitate this, have the child blow air out while opening and closing the lips. A feather can be used to help demonstrate blowing air out.

c. When the child can imitate opening lips and releasing air, work on getting him to make the sound he produces louder.

SHAPING PROCEDURE FOR B

Procedure 1

a. Have the child imitate a vowel sound such as /ɑ/.

b. When he can imitate this, have him imitate rounding and unrounding the lips during vowel production.

c. When he can imitate this, have him imitate closing and opening the lips during vowel production. This will produce the sound string /bɑbɑbɑ/.

d. Finally using an imitation procedure work with the child on /bɑ/ in isolation.

Procedure 2

a. Have the child imitate opening and closing the lips without any breath production. The lips should not be rounded.

b. When he can do this, have him imitate opening and closing the lips with breath production. A feather can be used to demonstrate air puffs from the mouth, but the lips should not be rounded.

c. When the child can imitate opening and closing the lips while releasing air, have him do this while producing a vowel sound. This will result in a sound string which approximates /bɑbɑbɑbɑ/.

d. Finally work with the child on /bɑ/ in isolation.

SHAPING PROCEDURES FOR N

Procedure 1

a. If the child can imitate "no" or "nose," have him imitate /nononono/.

b. When the child can do this, switch to imitating /nənənə/ or /nʌnʌnʌ/.

c. When the child can imitate /nənənə/ or /nʌnʌnʌ/, have him elongate the initial /n/ so he produces /nnnnnnʌnʌ/.

d. Finally have the child imitate the production of /nʌ/ or /n/ in isolation.

Procedure 2

a. If the child can imitate a clicking sound with the tip of his tongue against the back of his upper teeth, have him imitate the click while humming with the lips open and the teeth slightly separated.

b. When the child is able to produce this clicking sound while humming, have him imitate /nənənə/ or /nʌnʌnʌ/.

c. When he is able to produce /nənənə/ or /nʌnʌnʌ/, go to Procedure 1, step c.

Procedure 3

a. If the child is able to imitate /dədə/, work on imitation of /dʌndʌn/ or /dəndən/.

b. When he is able to imitate /dʌndʌn/ or /dəndən/, work on imitation of /nʌnʌ/ or /nənə/. The tongue is in the same place for both /d/ and /n/. By combining the two sounds into a syllable, imitation is sometimes facilitated.

c. When the child is able to imitate /nʌnʌ/ or /nənə/, go to Procedure 1, step c.

Procedure 4

a. If the child can produce "mama," prevent him from closing his lips during the production of /m/. Gradually remove your physical restraint and get him to keep his lips open on his own.

b. When the child can imitate /nənə/ without your help, go to Procedure 1, step c.

SHAPING PROCEDURES FOR N (cont.)

Procedure 5

a. Have the child imitate placing his tongue behind his upper front teeth. A tongue depressor can be used at first to help him put his tongue there.

b. Once the child has learned to place his tongue there by himself, have him imitate vocalizing with the tongue there. This will produce an extended /n/, i.e. /nnnnnn/.

c. Finally have the child imitate the production of /n/ or /nʌ/ in isolation.

Procedure 6

a. Have the child imitate humming. He will produce /mmmm/.

b. Once the child imitates this, have him part his lips while humming. This will result in an "uh" or /ʌ/ sound.

c. When the child is imitating /ʌ/, get him to place his tongue behind his upper teeth while imitating /ʌ/. This may result in the production of /nʌ/.

d. Finally have the child imitate /n/ in isolation.

SHAPING PROCEDURES FOR H

Procedure 1

a. Have the child imitate mouth opening.

b. When he can imitate this, using a feather, have him imitate blowing. The mouth should be open but not rounded when blowing out. This will result in the production of /h/.

Procedure 2

a. Have the child imitate taking a deep breath.

b. Have the child imitate blowing out through his open mouth. This will result in production of the /h/ sound.

SHAPING PROCEDURES FOR T

Procedure 1

a. Have the child imitate placing his tongue behind but not touching his upper front teeth. A tongue depressor can be used to help him place his tongue there.

b. Once the child can place his tongue in the correct position, have him imitate a sharp exhalation of breath. This will result in the production of /t/.

c. If the air escapes through his nose instead of his mouth, gently hold his nostrils together and work on exhaling through the mouth.

d. Gradually fade the physical prompt as the child is able to produce the /t/ correctly.

Procedure 2

a. If the child can imitate a tongue click while inhaling air have him imitate short breath exhalation.

b. Have him place his tongue in the same position as for the click, but rather than inhaling, have him exhale. This will result in the production of /t/.

Procedure 3

a. If the child can imitate /tɑtɑ/, place your hand gently over his mouth after the initial /t/.

b. Gradually fade your hand prompt so that he produces /t/ in isolation.

Procedure 4

a. If the child can imitate /dɑdɑ/, work on having him imitate /dɪdɪ/.

b. When he is able to produce /dɪdɪ/, have him imitate /dɪt/ or /dɪtdɪt/.

c. Once he is able to do this, have him imitate /dɪ-t/ with emphasis on the /t/.

d. Have him imitate the /t/ in isolation.

SHAPING PROCEDURES FOR T (cont.)

Procedure 5

a. If the child can imitate /dədə/, work on imitation of this in a whispered voice. This will approximate /tətə/, because the /t/ and /d/ are made in the same way, only /t/ is voiceless.

b. If the child is able to whisper /tətə/, work on imitation of /tə/.

c. When the child is able to imitate /tə/ in a whispered voice, increase the volume until he can produce /tə/ or /t/.

SHAPING PROCEDURES FOR S

Procedure 1

a. Have the child imitate putting the tip of his/her tongue between the front teeth.

b. When he/she can imitate this, have the child imitate blowing the air out with the teeth and tongue in this position. Be careful not to round your lips.

c. When the child is able to imitate this, move your tongue right behind your upper front teeth on the roof of your mouth, and have your child imitate this. Look in the mirror so the child can see where your tongue is.

d. When the child is able to put his/her tongue in this position, make an /s/ sound for your child to imitate.

e. The child with his/her tongue near the roof of the mouth behind the teeth, may be able to imitate the /s/ sound.

Procedure 2

a. Have the child imitate the /ʃ/ scund (as in shoe).

b. If the child is able to imitate this sound, put your finger or a tongue depressor in the child's mouth and barely touch the roof of the mouth right behind the upper front teeth. Have the child barely touch the tip of his/her tongue to the spot where your finger touches the roof of his/her mouth.

c. Next have the child make the /ʃ/ sound with the tongue right behind the front teeth. This should sound like an /s/ sound.

Procedure 3

a. Have the child imitate the /t/ sound several times.

b. Have him/her imitate the /t/ sound followed by the /s/ sound. This should sound like the syllable "tis" when you whisper it.

c. When the child is able to imitate the sound "tis," have him/her imitate only the /s/ sound.

Procedure 4

a. If the child is able to imitate /z/, have him/her imitate the /z/ sound while whispering. A whispered /z/ is an /s/ sound.

Procedure 5

a. If the child is able to imitate the /h/ sound ("huh"), have him/her imitate this sound while his/her teeth are closed.

Procedure 6

a. Have the child imitate the sound of air leaking out of a tire, "sssssss".

b. Shorten this sound to an /s/ sound.

SHAPING PROCEDURES FOR M

Procedure 1

a. Have the child imitate humming with his lips closed. This will result in production of /mmmm/.

b. Work with the child on shortening the hum so as to produce /m/.

Procedure 2

a. Have the child imitate the /b/ sound.

b. While physically holding the child's lips together have him imitate /b/. This will approximate the /m/ sound.

c. Gradually fade your prompt so that the child puts his own lips together and produce /m/.

Procedure 3

a. If the child imitates "mama," work on having him imitate this with a longer /m/ sound, /mmmmammma/.

b. Fade out the /a/ sound by having him keep his lips closed.

Procedure 4

a. If the child imitates the vowel sound /a/, prompt him to close his mouth while producing it. This will result in the production of /am/.

b. Gradually fade out your prompt so he closes his lips spontaneously.

c. Finally have him imitate /m/ in isolation.

SHAPING PROCEDURES FOR W

Procedure 1

a. Have the child imitate rounding and unrounding his lips without breath production.

b. When he can do this, have him imitate blowing with his lips rounded. A feather can be used to help him learn to blow air out.

c. Once the child can release air with his lips rounded, have him imitate vocalizing the vowel /u/ with his lips rounded.

d. Next, have the child close his lips while they are rounded (you can provide physical assistance) then open them, release air imitating /u/. This will result in the production of /wu/.

e. Work with the child on making the /w/ louder and the /u/ shorter.

f. Finally teach him to produce /wʌ/.

Procedure 2

a. If the child can imitate the vowel /u/ go to Procedure 1, step d, or have him imitate /u/ quickly followed by /i/. Have the child produce these two sounds closer and closer together. This will result in the production of /u-wi/.

b. When the child can imitate /u-wi/ gradually fade out the /u/ so he is imitating only /wi/.

c. Finally, teach him to produce /wʌ/.

SHAPING PROCEDURES FOR G

Procedure 1

a. Have the child imitate the vowel "eee."

b. When he or she can imitate this sound easily, have the child imitate the word "gee" (as in the name McGee). Be sure to exaggerate the /g/ sound. Sometimes this will help him or her hear the sound better. If your child cannot imitate "gee" perhaps "eeg" will be easier. Another technique is to say "gee gee gee" rapidly and have the child attempt to imitate.

c. When the child is able to imitate "gee," "eeg," or "geegeegee" easily, have the child imitate the /g/ sound by itself which is, "guh."

Procedure 2

a. Have the child imitate an "easy gentle cough."

b. When he can do this easily, have him or her imitate a gentler cough, without much effort.

c. Gradually change the cough to a /g/ sound ("guh") and have the child imitate this.

Procedure 3

a. Have the child imitate the /h/ sound, "huh."

b. Holding a feather or piece of tissue paper in front of your mouth to show how puffs of air come out of the mouth, have your child imitate "guh," "guh," "guh," or "gee," or "geegeegee."

c. When the child is able to do this, have him or her imitate a single "guh."

Procedure 4

a. Make the sound in the back of your throat, like children often do when imitating an explosion or gunshot noise.

b. When the child can do this, have him or her imitate shorter and shorter bursts of this noise.

c. Gradually have the child imitate the /g/ sound ("guh") by shortening the "explosion" sound.

SHAPING PROCEDURES FOR D

Procedure 1

a. Using a tongue depressor have the child place his tongue in the proper position behind the upper front teeth.

b. When he can do this without any physical prompts, have him imitate exhaling sharply with the tongue in this position. The response may approximate /dʌ/, but more likely will sound like /tʌ/ or /t/.

c. Work on producing a vowel sound, for example /ʌ/ and interrupting the vowel sound by raising the tongue behind the upper front teeth. The response should sound like /ʌdʌ/.

d. Work on production of /dʌ/ by fading the initial vowel.

Procedure 2

a. If the child can imitate a tongue click behind the upper front teeth, work on imitation of /t/ instead of the click.

b. When the child can produce the /t/ sound, go to Procedure 1, step c.

Procedure 3

a. If the child can say /dada/, or anything repetive /d/--vowel combination such as /dududu/, cover his mouth after the first sound.

b. Gradually fade the physical prompt until he can produce the /d/-vowel combination by himself.

Procedure 4

a. If the child can imitate /na/, gently hold his nostrils together to produce a nasalized /da/.

b. Work on production of /da/ and gradually fade the physical prompt until the child is able to produce /da/ by himself.

SHAPING PROCEDURES FOR R

Procedure 1

a. If the child is able to imitate /lalala/, work on imitation of /lɝlɝlɝ/.

b. When the child can imitate /lɝlɝlɝ/, have him imitate /lɝ /.

c. If he is able to do this, work on imitation of the /ɝ / in isolation.

d. When he can do this, have him imitate the sounds /ɝʌ / or "erruh".

e. Gradually fade the initial sound until the child can say /rʌ/.

Procedure 2

a. If the child can imitate /zzzz/, have him gradually lower his jaw while making this sound. He must be able to keep his tongue close to the roof of his mouth while he is lowering his jaw.

b. The sound the child makes will approximate the /ɝ/ sound. Go to Procedure 1, step d.

Procedure 3

a. Help the child learn to elevate the tip of his tongue close to the roof of his mouth either by imitation or with a tongue depressor.

b. When he is able to do this without physical prompting, have him imitate the /ɝ/ sound with his tongue in this position.

c. When he is able to do this, go to Procedure 1, step e.

Procedure 4

a. If the child is saying /wa/ instead of /ra/, first work on placing the tongue tip to the roof of the mouth without vocalization.

b. Then, holding the child's lips in a smiling position, and thus preventing him from rounding them, have him imitate /ra/.

c. Gradually fade the physical prompts until the child can say /ra/ by himself.

SHAPING PROCEDURES FOR L AT END OF WORDS

Procedure 1

a. Have the child imitate placing his tongue behind his upper teeth.

b. When he can do this, have him imitate the sound /ʌ/ with his tongue in the raised position. This will result in an approximation of /ʌl/.

c. Have the child imitate /ʌl/ or /ɛl/.

Procedure 2

a. Using a tongue depressor have the child place his tongue behind his upper teeth.

b. With the depressor as an aid have him imitate the sound /ʌl/.

c. Fade the depressor so the child produces /ʌl/ by himself.

SHAPING PROCEDURES FOR L AT THE BEGINNING OF WORDS

Procedure 1

a. If the child can imitate /lalala/, work on having him imitate /la/ in isolation by putting your hand over his mouth.

b. Gradually fade the hand prompt so he produces /la/.

Procedure 2

a. Have the child imitate raising and lowering his tongue. A tongue depressor can be used to help the child at first.

b. Once the child can imitate this, have him produce the vowel sound /a/. This will result in production of the sound /lalala/.

c. Have the child imitate /la/ by placing your hand over his mouth after the first sound. Gradually fade your hand prompt so the child produces /la/ in isolation.

SHAPING PROCEDURES FOR /ʃ/ SH SOUND

Procedure 1

Although the child may not be able to imitate you when you say the "sh", /ʃ/ sound by itself, he may be able to imitate you if you put your finger in front of your lips (as you do when telling a child to keep quiet). Say "sh", "sh", "sh". This game is played in the classroom and the child may be able to produce the "sh" /ʃ/ sound if you play the same game.

Procedure 2

a. If the child can imitate the /rʌ/ sound "ruh", change the stimulus and say "shuh" /ʃʌ/. Have him attempt to imitate this sound.

b. Alternate back and forth saying "ruh" /rʌ/ and "shuh" /ʃʌ/ and have the child try to imitate you. Because the /r/ and /ʃ/ sounds are made in almost the same place in your mouth, the child may be able to say the /ʃ/ sound after he says the /r/ sound.

Procedure 3

a. Have the child imitate you putting your tongue tip on the roof of your mouth. (Before you do this procedure, look in a mirror, open your mouth and make the /ʃ/ sound. Your tongue gets wide and flat and the tip touches the roof of your mouth about ½ inch or more back from your upper front teeth.)

b. When the child is able to put his tongue in this position, have him imitate the /ʃ/ sound with the mouth open.

c. When the child is able to do this have him imitate the /ʃ/ sound with the teeth almost closed.

Procedure 4

a. If the child is able to imitate the /s/ sound, using a tongue depressor or your finger, push the child's tongue tip further back (not too far) on the roof of the mouth.

b. With his tongue in this position, have the child imitate the /ʃ/ sound.

c. Gradually remove your support, and have the child imitate the /ʃ/ sound without prompts.

SHAPING PROCEDURES FOR F

Procedure 1

a. Have the child imitate biting his lower lip with his upper teeth.

b. Have him/her imitate blowing a feather or tissue with his/her mouth in this position. The sound that is made is the /f/ sound.

Procedure 2

a. Have the child imitate blowing.

b. When he/she can do this gently hold his/her lower lip under his/her upper teeth and imitate the /h/ "hhhuh" sound again. This should be an /f/ sound. If it is not, it is because the air is getting out of the corners of the mouth and not escaping between the lip and teeth.

c. Gently press the corners of the mouth. This causes them to touch the teeth and stop the air from escaping.

d. Gradually take away your hands as the child is able to hold his/her mouth in this position. You may also train the child to hold his/her own lip while making the /f/ sound.

Procedure 3

a. If the child is making a /p/ sound instead of the /f/ sound, hold his upper lip up with your finger.

b. Gradually take away your finger as he/she learns to hold the upper lip away from the lower lip.

SHAPING PROCEDURES FOR /tʃ/ CH

Procedure 1

a. If the child can imitate /ta/, work on imitation of /t^ʃ t^ʃ t^ʃ / in a whispered voice.

b. Once the child is able to imitate the syllables /t^ʃ t^ʃ t^ʃ / in a whispered voice, work on imitation of /tʃ tʃ tʃ /.

c. When he can do this, get him to imitate /tʃ/.

Procedure 2

a. Have the child imitate placing his tongue behind his upper front teeth. At first you may use a tongue depressor to help him learn the correct placement.

b. When he is able to place his tongue in this position without physical prompts, have him imitate the /ʃ/ sound.

c. Gradually shape this into the /tʃ/ sound.

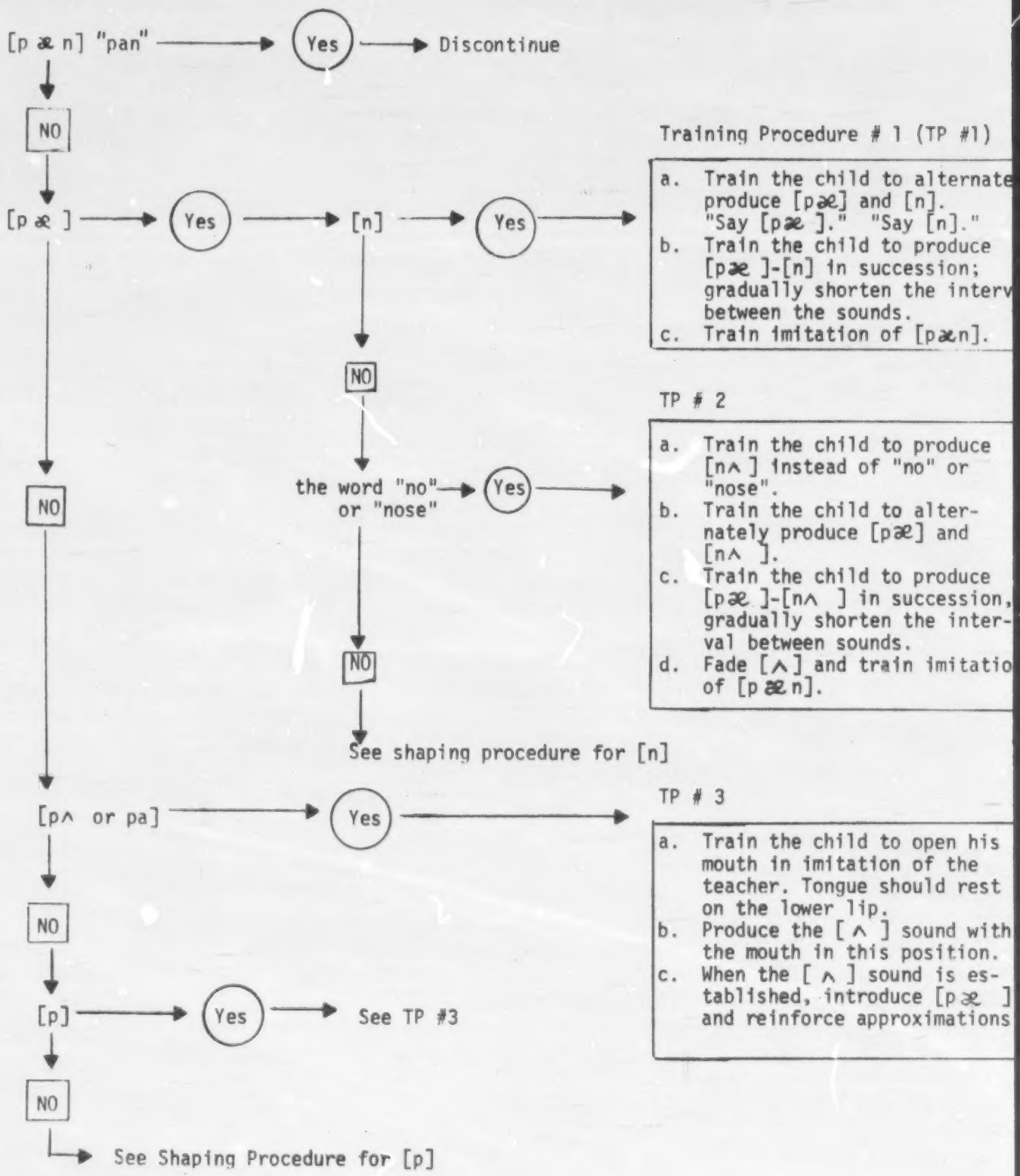
Procedure 3

a. Many children can say "choo-choo" even if they cannot produce the /tʃ/ by itself, or in other words. If the child is able to say "choo-choo", shape imitation of /tʃ^ tʃ^/ by preventing the child from rounding his lips during the production of the /u/ vowel.

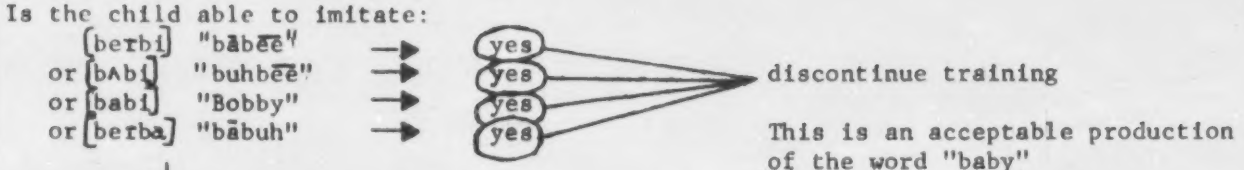
b. When the child is able to produce /tʃ^ tʃ^/ without physical prompts, have him imitate the /tʃ/ sound in isolation.

SHAPING PROCEDURE FOR PAN

Is the child able to imitate:


[p æ n] "pan"
Yes
Discontinue
NO
[p æ]
Yes
[n]
Yes
NO
the word "no" or "nose"
Yes
NO
See shaping procedure for [n]
[pʌ or pa]
Yes
NO
[p]
Yes
See TP #3
NO
See Shaping Procedure for [p]
Training Procedure # 1 (TP #1)
a. Train the child to alternate produce [pæ] and [n]. "Say [pæ]." "Say [n]."
b. Train the child to produce [pæ]-[n] in succession; gradually shorten the interv between the sounds.
c. Train imitation of [pæn].
TP # 2
a. Train the child to produce [nʌ] instead of "no" or "nose".
b. Train the child to alternately produce [pæ] and [nʌ].
c. Train the child to produce [pæ]-[nʌ] in succession, gradually shorten the interval between sounds.
d. Fade [ʌ] and train imitatio of [p æ n].
TP # 3
a. Train the child to open his mouth in imitation of the teacher. Tongue should rest on the lower lip.
b. Produce the [ʌ] sound with the mouth in this position.
c. When the [ʌ] sound is established, introduce [p æ] and reinforce approximations

SHAPING PROCEDURE FOR BABY



NO

[bibi] "beebee" → yes →

Training Procedure #1 (TP #1)

a. Have the child try to imitate the syllable "bay" [bɛɪ]. If he is able to do this, train him to say the word "baby" by having the child imitate first the first syllable "bay" [bɛɪ] then imitate the last syllable "bee" [bi]. When the child is able to imitate both of these syllables alternately, have him then imitate "bay" [bɛɪ], then "bee" [bi] with a pause between syllables. Gradually shorten the interval between the two syllables.
b. If the child cannot imitate the syllable "bay" [bɛɪ], you must teach it to him. First teach him the vowel sound "ay" [eɪ]. Open your mouth wide so the child can imitate your mouth movements.
c. When the child can say "ay" [eɪ] teach him to say "bay [bɛɪ]. Close your lips tightly and make the /b/ sound in "bay" [bɛɪ] in an exaggerated manner. Have him imitate the syllable "bay" [bɛɪ].
d. If the child cannot imitate "bay" [bɛɪ], then break the syllable down into the consonant "b" [b] and the vowel "ay" [eɪ]. Have him imitate first "b" then "ay". Gradually shorten the interval between the two syllables.
e. When he can imitate "bay", teach him to say "baby" by having him imitate the two syllables "bay" [bɛɪ] and "bee" [bi] alternately. Gradually shorten the interval between the two syllables until the child can say "baby".

NO

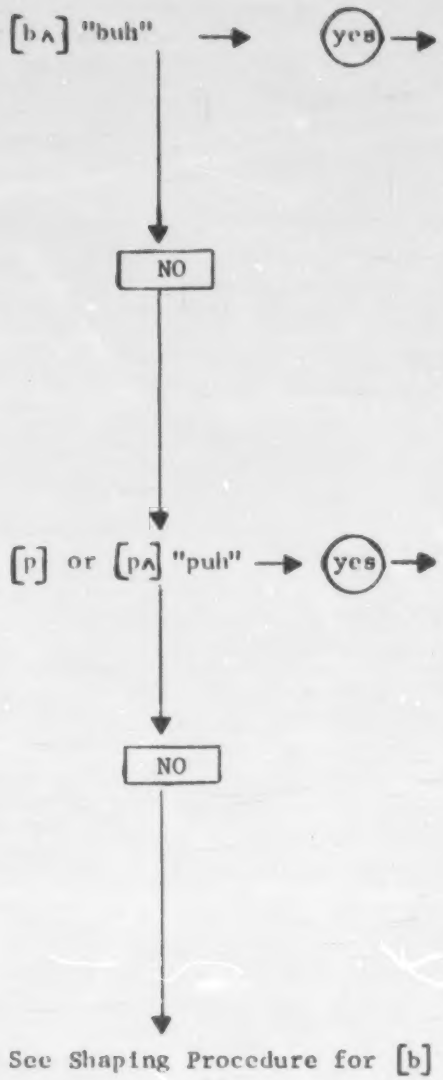
TP #2

[bi] "bee" → yes →

a. Train the child to say "beebee" [bibi] by having him repeat "bee (pause) bee". Gradually shorten the interval between syllables. You might try tapping the table with a pencil each time he is to imitate "bee" [bi]; gradually shorten the interval between beats. Go to TP #1.
b. If the child is still unable to learn "beebee" [bibi], try having him imitate a whole string of "bee"'s "beebeebeebeebee" [bibibibibi]. Gradually shorten the number of "bee"'s in the stimulus until he is able to repeat "beebee" [bibi]. Go to TP #1.

NO

See next page.



TP #3

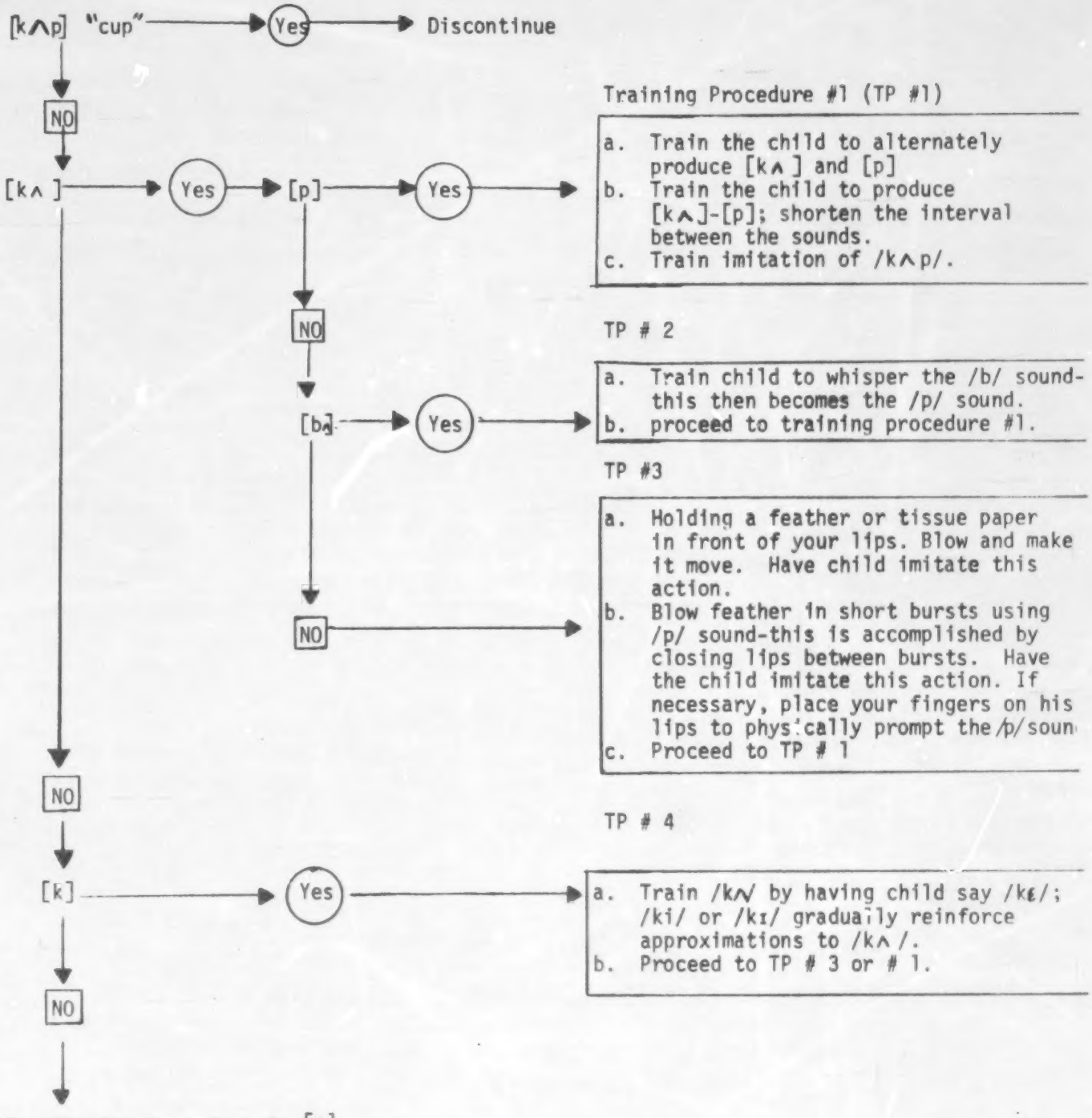
a. Train the child to imitate the "ee", [i] vowel by exaggerating the lip position for this sound (a big smile) when you present him with the sound to imitate.
b. When the child is able to imitate the "ee" [i] vowel, train him to imitate the syllable "bee" [bi] by alternately having him imitate first the "b" [b] sound and then the "ee" [i] sound.
c. When the child is able to imitate these sounds alternately, gradually shorten the interval between the two sounds until he can say "bee" [bi]. Go to TP #2.

TP #4

a. Train the child to imitate any vowel sound you choose, preferably "ee" [i] or "uh" [ʌ].
b. Train the child to imitate this vowel preceeded by p, for example "pee" [pi] or "puh" [pʌ].
c. The difference between the [p] and the [b] is very small, only a matter of voicing. It is often difficult for the child to make this distinction. Try to train the [b] sound by having the child imitate a double syllable "beebee" [bibi] or "buhbuh" [bʌbʌ]. The child may not learn to make the [b] sound from the [p] sound very easily.
d. When the child is able to say the [b] sound, go to TP #1, 2, or 3, which ever is most appropriate.

SHAPING PROCEDURE FOR CUP

Is the child able to imitate:


[kʌp] "cup"
Yes
Discontinue
NO
[kʌ]
Yes
[p]
Yes
Training Procedure #1 (TP #1)
a. Train the child to alternately produce [kʌ] and [p]
b. Train the child to produce [kʌ]-[p]; shorten the interval between the sounds.
c. Train imitation of /kʌp/.
NO
TP # 2
[b]
Yes
a. Train child to whisper the /b/ sound-this then becomes the /p/ sound.
b. proceed to training procedure #1.
TP #3
NO
a. Holding a feather or tissue paper in front of your lips. Blow and make it move. Have child imitate this action.
b. Blow feather in short bursts using /p/ sound-this is accomplished by closing lips between bursts. Have the child imitate this action. If necessary, place your fingers on his lips to physically prompt the /p/ soun
c. Proceed to TP # 1
NO
TP # 4
[k]
Yes
a. Train /kʌ/ by having child say /kɛ/; /ki/ or /kɪ/ gradually reinforce approximations to /kʌ /.
b. Proceed to TP # 3 or # 1.
NO
See Shaping Procedure for [K]

SHAPING PROCEDURE FOR SPOON

Is the child able to imitate:

[spun] "spoon" or [pun] "poon" → yes → discontinue

NO

[pu] → yes → [n] → yes →

Training procedure #1 (TP#1)

a. train the child to alternately prod [pu] and [n]. "Say [pu]." "Say [n].
b. train the child to produce [pu]-[n] in succession. Gradually shorten the interval between sounds.
c. train imitation of [pun].

NO

the word "no" or "nose" → yes →

TP #2

a. train the child to produce [nʌ] instead of "no" or "nose"
b. train the child to alternately produce [pu] and [nʌ]
c. Train the child to produce [pu]-[nʌ in succession; gradually shorten the interval between the sounds.
d. Fade the [ʌ] and train imitation of [pun].

NO

NO

See Shaping Procedure for [n]

[pʌ] or [p] → yes → [u] → yes →

TP #3

a. train the child to produce [u] in imitation
b. using exaggerated lip movements, clo your lips tightly and give the stimulus [pu]. Have the child imitate this procedure.

NO

NO

any vowel sound →

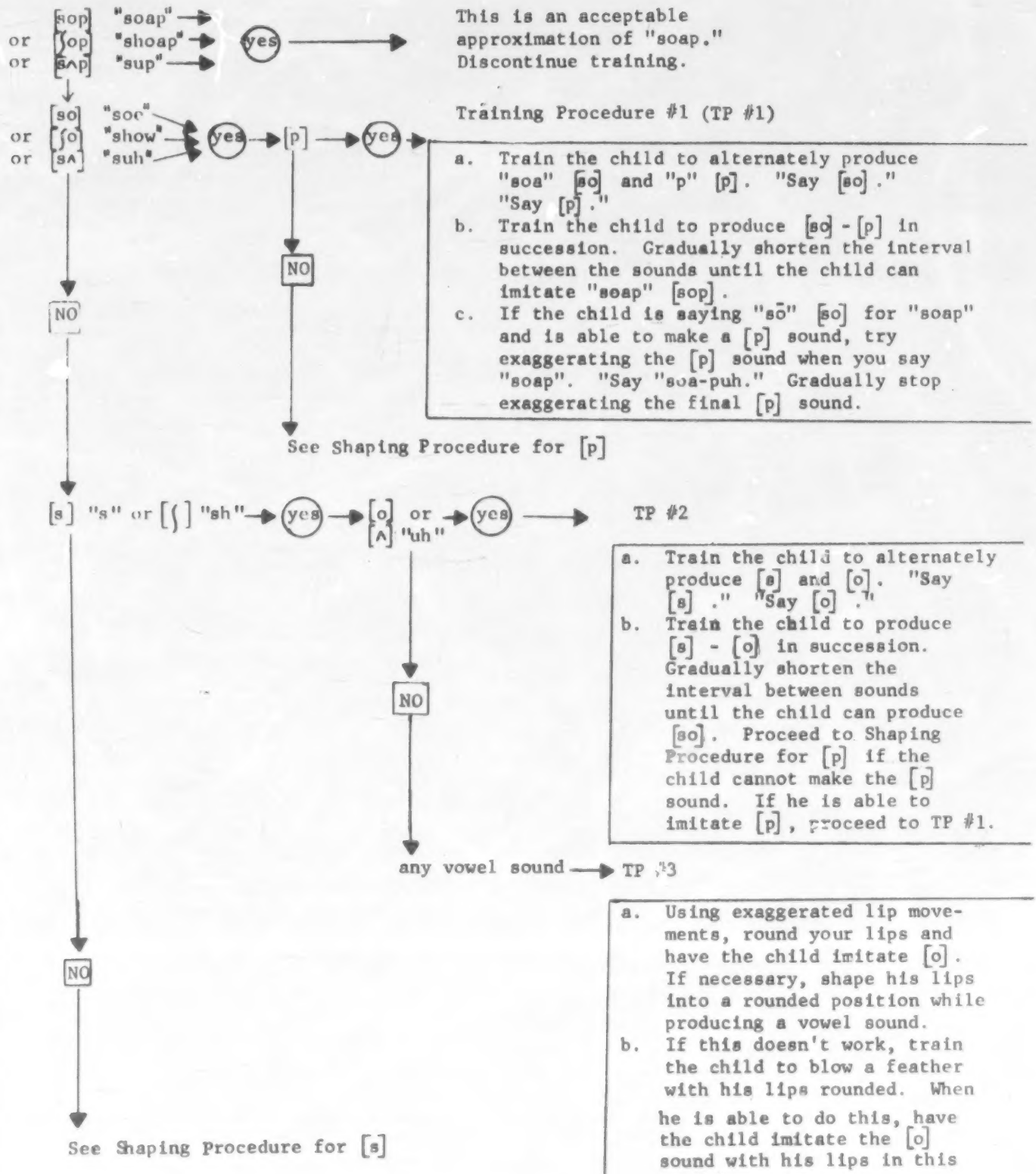
TP #4

a. using exaggerated lip movements, rou your lips and have the child imitate [u]. If necessary, shape his lips into a rounded position while producing a vowel sound.

See Shaping Procedure for [p]

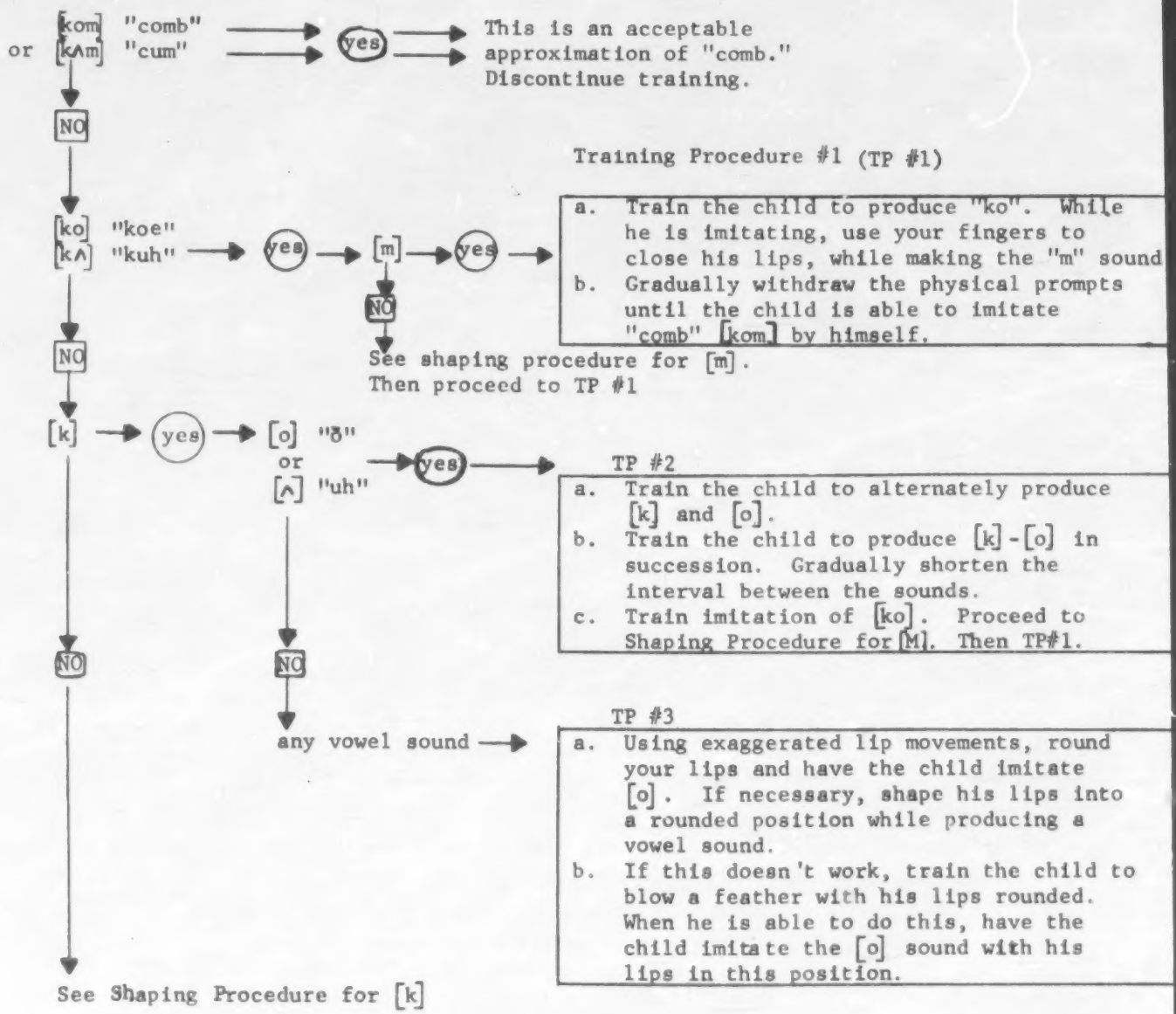
SHAPING PROCEDURE FOR SOAP

Is the child able to imitate:


[sop] "soap"
or [ʃop] "shoap"
or [sʌp] "sup"
yes
This is an acceptable approximation of "soap." Discontinue training.
[so] "soe"
or [ʃo] "show"
or [sʌ] "suh"
yes
[p]
yes
Training Procedure #1 (TP #1)
a. Train the child to alternately produce "soa" [so] and "p" [p]. "Say [so]." "Say [p]."
b. Train the child to produce [so] - [p] in succession. Gradually shorten the interval between the sounds until the child can imitate "soap" [sop].
c. If the child is saying "sō" [so] for "soap" and is able to make a [p] sound, try exaggerating the [p] sound when you say "soap". "Say "soa-puh." Gradually stop exaggerating the final [p] sound.
NO
NO
See Shaping Procedure for [p]
[s] "s" or [ʃ] "sh"
yes
[o] or [ʌ] "uh"
yes
TP #2
a. Train the child to alternately produce [s] and [o]. "Say [s]." "Say [o]."
b. Train the child to produce [s] - [o] in succession. Gradually shorten the interval between sounds until the child can produce [so]. Proceed to Shaping Procedure for [p] if the child cannot make the [p] sound. If he is able to imitate [p], proceed to TP #1.
NO
any vowel sound
TP #3
a. Using exaggerated lip movements, round your lips and have the child imitate [o]. If necessary, shape his lips into a rounded position while producing a vowel sound.
b. If this doesn't work, train the child to blow a feather with his lips rounded. When he is able to do this, have the child imitate the [o] sound with his lips in this position.
NO
See Shaping Procedure for [s]

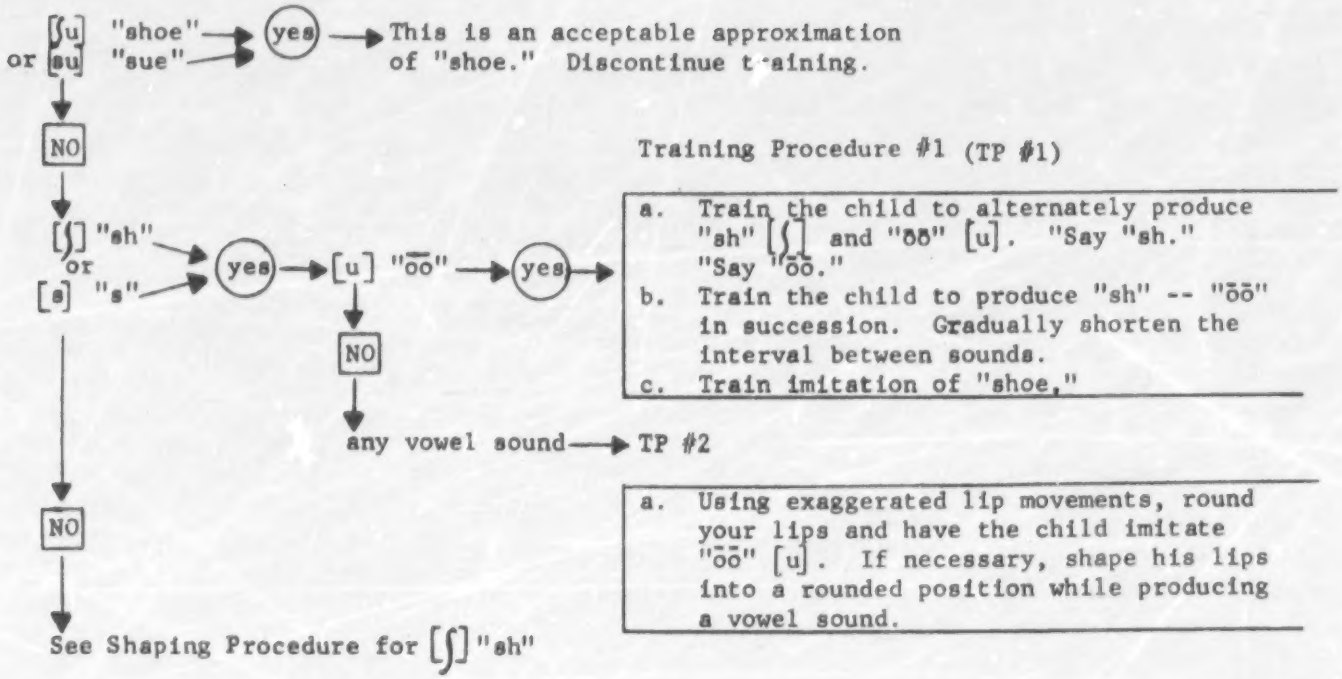
SHAPING PROCEDURE FOR COMB

Is the child able to imitate:


[kom] "comb"
or [kʌm] "cum"
yes
This is an acceptable approximation of "comb." Discontinue training.
NO
Training Procedure #1 (TP #1)
[ko] "koe"
[kʌ] "kuh"
yes
[m]
yes
NO
a. Train the child to produce "ko". While he is imitating, use your fingers to close his lips, while making the "m" sound
b. Gradually withdraw the physical prompts until the child is able to imitate "comb" [kom] by himself.
See shaping procedure for [m]. Then proceed to TP #1
NO
[k]
yes
[o] "ō"
or
[ʌ] "uh"
yes
TP #2
a. Train the child to alternately produce [k] and [o].
b. Train the child to produce [k]-[o] in succession. Gradually shorten the interval between the sounds.
c. Train imitation of [ko]. Proceed to Shaping Procedure for [M]. Then TP#1.
NO
NO
any vowel sound
TP #3
a. Using exaggerated lip movements, round your lips and have the child imitate [o]. If necessary, shape his lips into a rounded position while producing a vowel sound.
b. If this doesn't work, train the child to blow a feather with his lips rounded. When he is able to do this, have the child imitate the [o] sound with his lips in this position.
See Shaping Procedure for [k]

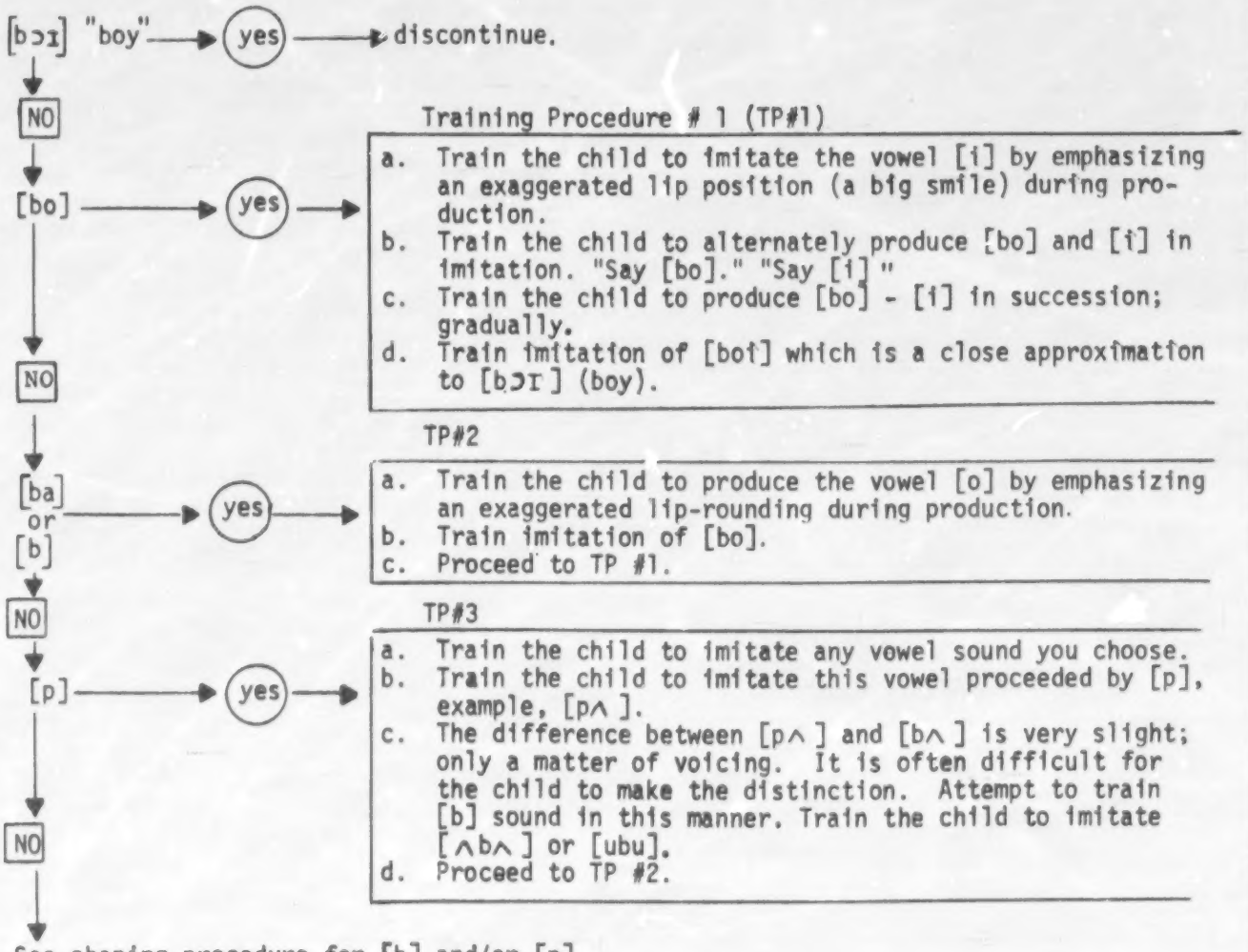
SHAPING PROCEDURE FOR SHOE

Is the child able to imitate:


[ʃu] "shoe"
or [su] "sue"
yes
This is an acceptable approximation of "shoe." Discontinue t aining.
NO
Training Procedure #1 (TP #1)
[ʃ] "sh"
or
[s] "s"
yes
[u] "oo"
yes
a. Train the child to alternately produce "sh" [ʃ] and "oo" [u]. "Say "sh." "Say "oo."
b. Train the child to produce "sh" -- "oo" in succession. Gradually shorten the interval between sounds.
c. Train imitation of "shoe,"
NO
any vowel sound
TP #2
a. Using exaggerated lip movements, round your lips and have the child imitate "oo" [u]. If necessary, shape his lips into a rounded position while producing a vowel sound.
NO
See Shaping Procedure for [ʃ] "sh"

SHAPING PROCEDURE FOR BOY

Is the child able to imitate:



Training Procedure # 1 (TP#1)

a. Train the child to imitate the vowel [i] by emphasizing an exaggerated lip position (a big smile) during production.
b. Train the child to alternately produce [bo] and [i] in imitation. "Say [bo]." "Say [i]."
c. Train the child to produce [bo] - [i] in succession; gradually.
d. Train imitation of [boi] which is a close approximation to [bɔɪ] (boy).

TP#2

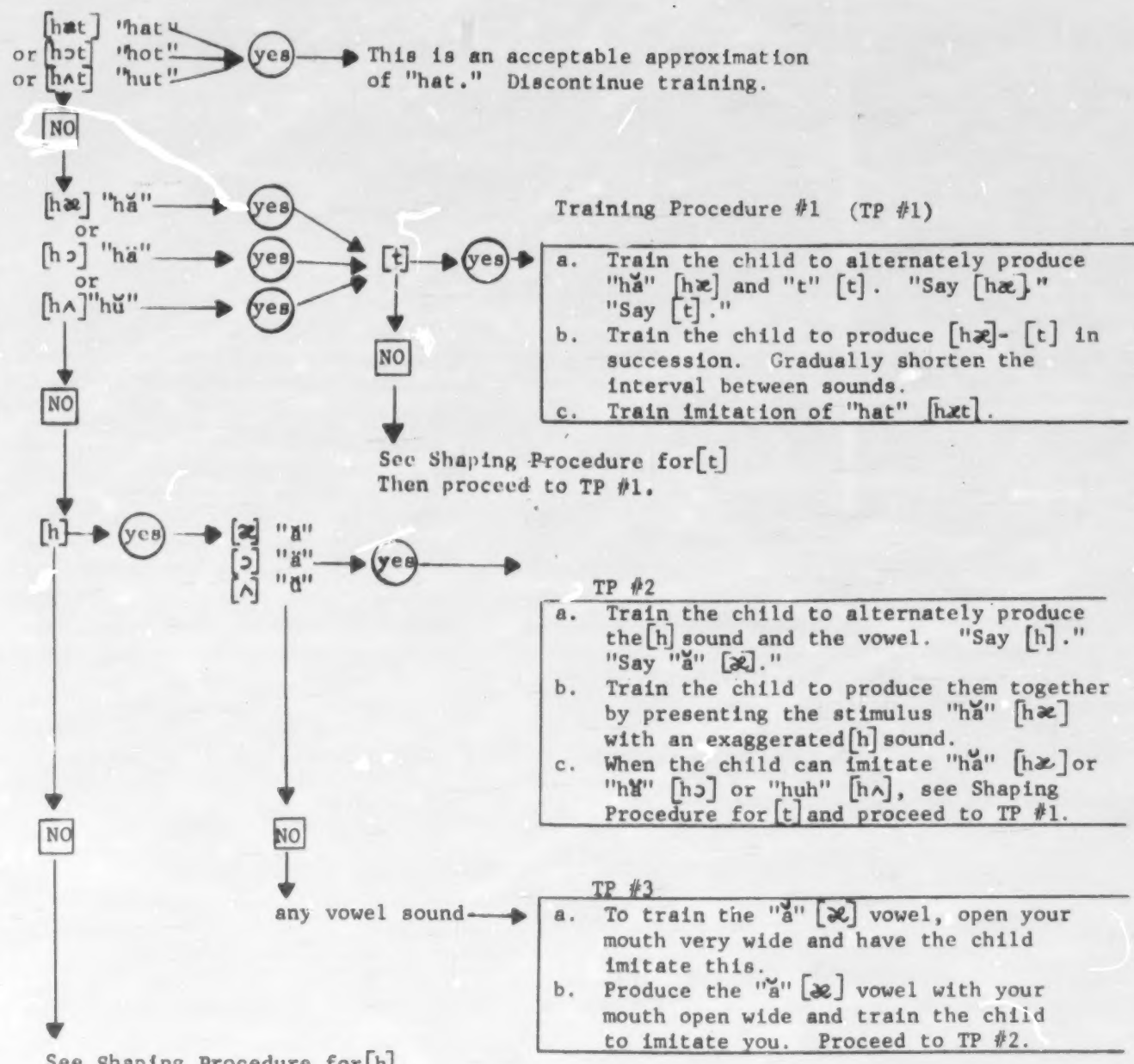
a. Train the child to produce the vowel [o] by emphasizing an exaggerated lip-rounding during production.
b. Train imitation of [bo].
c. Proceed to TP #1.

TP#3

a. Train the child to imitate any vowel sound you choose.
b. Train the child to imitate this vowel proceeded by [p], example, [pʌ].
c. The difference between [pʌ] and [bʌ] is very slight; only a matter of voicing. It is often difficult for the child to make the distinction. Attempt to train [b] sound in this manner. Train the child to imitate [ʌbʌ] or [ubu].
d. Proceed to TP #2.

SHAPING PROCEDURE FOR HAT

Is the child able to imitate:


[hæt] "hat"
or [hɔt] "hot"
or [hʌt] "hut"
yes
This is an acceptable approximation of "hat." Discontinue training.
NO
[hæ] "hă"
or
[hɔ] "hä"
or
[hʌ] "hŭ"
yes
[t]
yes
NO
Training Procedure #1 (TP #1)
a. Train the child to alternately produce "hă" [hæ] and "t" [t]. "Say [hæ]." "Say [t]."
b. Train the child to produce [hæ]- [t] in succession. Gradually shorten the interval between sounds.
c. Train imitation of "hat" [hæt].
See Shaping Procedure for [t] Then proceed to TP #1.
[h]
yes
[æ] "ă"
[ɔ] "ä"
[ʌ] "ŭ"
yes
TP #2
a. Train the child to alternately produce the [h] sound and the vowel. "Say [h]." "Say "ă" [æ]."
b. Train the child to produce them together by presenting the stimulus "hă" [hæ] with an exaggerated [h] sound.
c. When the child can imitate "hă" [hæ] or "hä" [hɔ] or "huh" [hʌ], see Shaping Procedure for [t] and proceed to TP #1.
NO
NO
any vowel sound
TP #3
a. To train the "ă" [æ] vowel, open your mouth very wide and have the child imitate this.
b. Produce the "ă" [æ] vowel with your mouth open wide and train the child to imitate you. Proceed to TP #2.
See Shaping Procedure for [h]

Appendix B

Lateralization Program

The purpose of the lateralization program is twofold. First, to increase the child's vocabulary and also to help him generalize the sounds he is capable of producing to different sound combinations, i.e., new words. The words which are presented in this appendix contain the same consonants as the words in the corresponding object groups. After a child is able to produce the component sounds in isolation (Phase 2), the parent or teacher should introduce the words and objects in the corresponding object group contained in this appendix. This training should take place either in supplementary language sessions or on an informal basis. The phase in which these additional words and objects are trained should correspond with the phase being trained in the formal language program. For example, if the child is working on comprehension of nouns (Phase 3) in Object Group 2 of the language program, the teacher should also begin expansion of the child's vocabulary through comprehension of the words presented in the lateralization program for that specific group. The teacher should always feel free to add other words that have particular relevance and usefulness for a specific child.

Object Group 1 - kitchen

Nouns: cake, coke, pop, boy, cookie, can, banana, bean, pin, book

Consonants: k, p, b, n

Object Group 2 - self-help area

Nouns: boy, pin, book, cap, coat, pants, sock, boot, toe, tummy, knee, mama, bunny, tub, toy, sun, panties

Consonants: k, p, b, n, h, t, s, m

Object Group 3 - picnic area

Nouns: cart, bus, car, truck, train, boat, bike, pot, plate, can, bucket, cat, cow, pony, duck, bear, pig, goat, rabbit, ant, bird, bug, bee, daddy, bowl, lid, glass, wall, drum, bell, ball

Verbs: go, bye-bye, hop, swim, sit, run, dig, wipe, beat, blow, color, cut, write, tie, rock, roll, tear, lick, lock

Consonants: k, p, b, n, h, t, s, m, w, l, g, d, r

Object Group 4 - sand table

Nouns: pail, bag, bucket, box, cart, bus, train, bike, boat, plane, car, table, rope, key, rock, gun

Verbs: lift, shake, shoot, empty, spin, tie, find, go, stop, roll, dump, fall, fight, fly, laugh, wind, kick, wipe, rock, pound, hit

Consonants: k, p, b, n, h, t, s, m, w, l, g, d, r, ʃ, ʒ

Object Group 5 - doll house

Nouns: grandpa, grandma, daddy, mommy, sister, dress, table, knife, fork, spoon, rug, sofa, lamp, fire, radio, clock, dress, shirt, pants, shoes, pillow, sheet, dish, record, stereo, glass, coffee

Verbs: catch, chew, march, sew, snap, sweep, cook, clean, cut, write, lift, wipe, walk, run

Consonants: k, p, b, n, h, t, s, m, w, l, g, d, r, ʃ, f, tʃ

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